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Model

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Monthly



'Emily'

Bomber Command Lancaster



- Ace of Aces – Hartmann's Messerschmitt Bf 109s
 - **Spifires Down Under – Operational History & Schemes**
 - Nautical Night Fighter – Fairey Fulmar NF II
 - **Tucano – Trainer with Teeth**
 - Painting bomb rings made easy!
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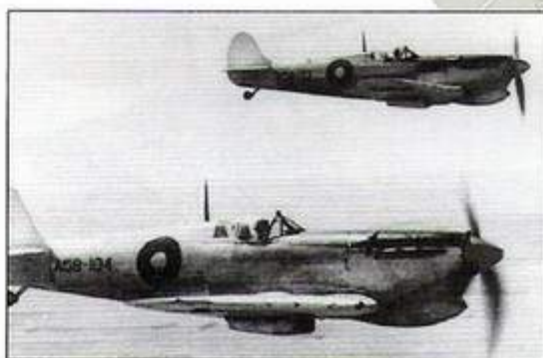
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Inspiration or demoralisation!

■ THE BIGGEST MODELLING EVENT IN the UK calendar, IPMS(UK)'s Scale Modelworld, (aka IPMS UK Nationals), has come and gone, and left me somewhat 'shell-shocked', with a sort of empty feeling! It's all a bit of an anti-climax now. For months we've been gearing up and looking forward to the event, and now... it's all over! But it was damn good whilst it lasted.

In next month's issue we'll be featuring a few pages covering the event and picking out some of

the aircraft models that took our team's collective 'eye' – and there were some absolute 'crackers'! I gazed in dumbstruck wonder at some of the models and cannot begin to comprehend the amazing skill of some modellers – and that was on the display stands, the standards in the competition area almost left me lost for words, but thankfully not for too long...

I've always maintained that I build for my own pleasure, and to keep my 'street cred' and prove to you, the readership, that I do actually practice what I preach, or to be more accurate, practice what I edit!

But *do* I just build for my own pleasure?

I am fortunate in that I am able to attend several IPMS(UK) modelling group meetings that are situated around where I live, *upt' North*, and occasionally take a finished model or two along to put on the display tables.

I rarely enter any form of competition now. I tend not to win and I cannot stand any form of criticism or rejection – real or implied! I once won my Class at an IPMS(UK) National Championships way back in the dim and distant 1970s. You can tell how long ago it was, as 1/48 scale was an 'emerging scale' over here in the UK and 1/72 scale ruled supreme – as indeed it still does now.

That was *'it'*, I had won an IPMS(UK) competition and vowed never to risk using the tactic of being friendly to the judge's guide dog as a basis of winning a competition again!

I have judged a few times though, (on occasions with my editorial colleague Mike Jerram, who edits our sister publication *'Scale Aviation Modeller'* – we both go a long way back!), and that is almost as nerve-racking as competing. When you are allowed, in fact as a judge, expected, to look in micro-detail at some competitors' models, it really does bring it home to you how wonderfully skilled some modellers really are. They

accomplish things that the rest of we mere mortals dare only dream about.

It is pure joy to look at an exceptionally well made model, but it can be a *double-edged sword* – will it inspire or demoralise? Once 'the penny drops' and you realise that you may personally never aspire to those exceptionally high standards, it *could* put you off for ever.

Thankfully, I have never aspired to be the best modeller in the world. I'm far too impatient! I've never lost that 'schoolboy' thrill of finishing a model and adding it to my collection. Granted, I'm never totally satisfied with my latest 'masterpiece'(sic), and there's always something that I am determined I will improve upon 'next time'.

I would class myself as a reasonably competent modeller, (well at least I do try to get my wings 'square' and my tailplanes horizontal to the fuselage), but I know that sometimes there may be an odd joint line that hasn't been rubbed down properly, a canopy frame line or two might not be absolutely straight or that an occasional bit of stencilling has been left off to expedite the finishing of a model to meet a printing deadline.

That is why, with all due respect to those modellers concerned, we perhaps sometimes run modelling features that may not feature the absolute very best made models in the world. I would always prefer to feature a modelling article with one or two minor flaws, or perhaps a not quite perfect paint finish, but that displays some modelling hint or tip, or such obvious enthusiasm for the subject matter, that it cannot help but inspire, rather than demoralise. So, before you write in complaining about the poor standard of my models, to paraphrase a current comedian's catchphrase, "*Do I look bouvier'd?*"

Neil Robinson

Editor, *'Model Aircraft Monthly'*

Ray Hanna

Ray Hanna, perhaps the best-known pilot on the UK warbird scene, died on 1 December 2005 at the age of 77.

A New Zealander, Ray learned to fly on Tiger Moths in his native land before working his passage to England in 1949 and joining the RAF. He trained on the Percival Prentice, Harvard, Balliol and Meteor before joining 79 Squadron with 2TAF in Germany, flying Meteor FR.9s in the tactical reconnaissance role that he was later to claim sowed the seed of his low flying skills! A posting to an Overseas Ferry Squadron saw Ray flying many early jets, including Vampire, Attacker, Venom, Sea Hawk, Hunter, Swift and Javelin.

Ray became a RAF Qualified Flying Instructor, and in the early 1960s he was a member of the College of Air Warfare's three-aircraft Meteor F.8 aerobatic team, which led in 1965 to him joining the then newly-formed Red Arrows as Red 3. A year later Ray became the leader, a position he was to hold twice, serving four years in all as Red 1. For his leadership of the Red Arrows he was awarded a Bar to the Air Force Cross he already held.

Retiring from the service in 1971, Ray began a career as an airline pilot, flying Boeing 707s and Lockheed TriStars. In 1979 he was appointed head of a company operating a privately-owned B707. During much of this time Ray flew displays in Sir Adrian Swire's Spitfire IX MH434, an aircraft he was later to own and with which he will forever be associated.

In 1981 Ray and his son Mark, whom he had taught to fly who had been a Phantom pilot in the RAF, formed the Old Flying Machine Company based at Duxford, and MH434 became the keystone of OFMC, which specialises in airshow, film and television work. Mark Hanna was tragically killed in Spain in September 1999 while flying OFMC's Hispano HA.1112 Buchon.

Ray continued to lead OFMC throughout the ensuing years, and flew his last displays in the past autumn.

To airshow goers the world over he will be remembered as one of, if not the, finest display pilots ever seen, for his meticulously accurate, flowing and breathtaking warbird displays.

MJ



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Australia's Spitfires

The Defence of Darwin and Beyond

Glenn Sands describes the role of the Spitfire in RAAF service in the Pacific Theatre in World War Two



■ BY EARLY 1942, AUSTRALIA'S DEFENCES WERE BEING tested to the limit, with the Japanese rapidly expanding in the Pacific region and by February, it was assumed that they would be on Australia's doorstep – with anticipated air raids on Darwin. The first such raid, which occurred on 19 February 1942, resulted in panic across Australia as it was expected that an invasion was shortly to follow.

The situation was made worse in that Australia lacked a suitable fighter defence force to counter the threat, simply relying on the Commonwealth Aircraft Corporation's (CAC) Wirraway, which was essentially a general trainer with a top speed of only 205 mph, a rate of climb under 2,000ft per minute and armament comprising two forward and one aft-firing machine guns! A proposed short-term solution was to develop a single-seat version of the Wirraway with an increased armament. The CAC Boomerang, as it became known, was not to fly until May 1942 with deliveries following three months later.

Following this first Japanese air raid on Darwin, a more urgent solution was required and the Australian Government appealed to their British and

American allies for help. The Americans responded quickly, diverting twenty-five P-40Es to the RAAF, in addition to maintaining the USAAF's existing 49th Fighter Group, also equipped with P-40Es, which was to be the sole defence of Darwin until August 1942.

The first P-40Es arrived within two weeks of the first Darwin raid, with more examples to follow. The British response was somewhat slower, having its hands full with supplying RAF fighter units in Europe and the Middle East. However, on 28 May, the British Government agreed to send three Spitfire squadrons and their associated equipment to support the defence of Australia.

Two of these squadrons, Nos 452 and 457, were Australian Empire Squadrons, which had been operating as part of Fighter Command, (flying RAF-serialised Spitfires), and had already seen extensive action over Europe. The third squadron was No 54, which had been one of the leading Spitfire units in Fighter Command during the Battle of Britain. One of the terms of the agreement was that sufficient parts and spares would be delivered in order that at least sixteen Spitfires could be maintained per squadron, allowing for a loss/wastage rate of five per month.

The Spitfire sub-type chosen was the tropicalised Mk Vc, still in quantity production in Britain, and fitted with the large Vokes carburettor intake filter, which was deemed to be the most suitable version for operations in Northern Australia, and plans were soon under way to ship the aircraft overseas under the code name of 'Capstans', applied in an effort to disguise the Spitfires' real identity and that they were being shipped to Australia.

However, in the summer of 1942 Britain was struggling on two fronts, both in Europe and in the Middle East, and the first forty-two Spitfires intended for Australia were actually diverted to the RAF's Desert Air Force. The first six of an eventual 245 Spitfire Vs to wear RAAF colours, (A58-1 to A58-185 and A58-200 to A58-259; serial numbers A58-186 to A58-199 were not allocated), finally arrived in Australia in September 1942, followed by a further ninety-four by the end of the year. The remaining 145



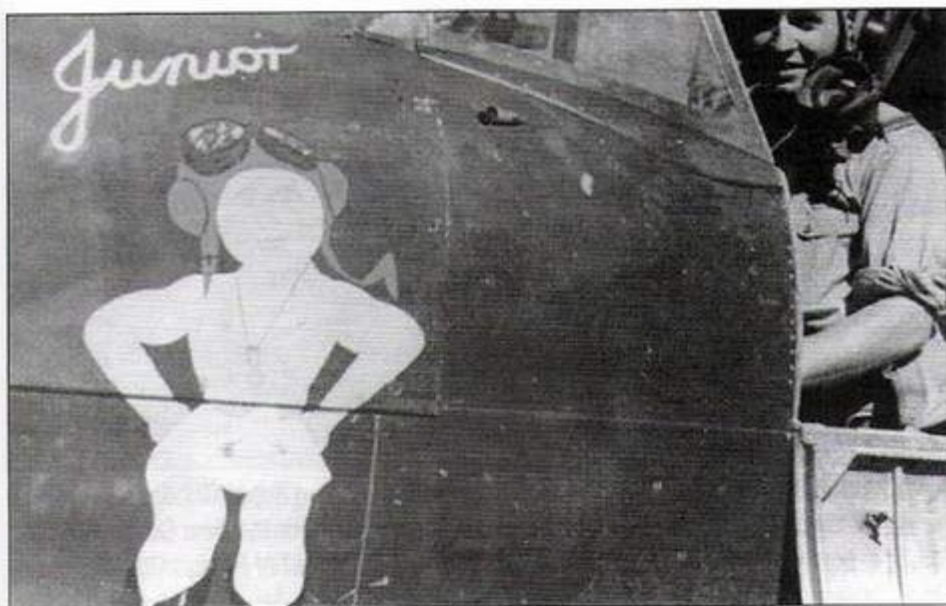
TOP A Spitfire Mk Vc pilot from No 54 Sqn receives some last minute assistance from a ground crewman before embarking on another patrol. Note the 'dark', (Dark Earth/Foliage Green), upper surfaces and the white wing leading edges spanning from the wing roots to the outer machine gun ports. **ABOVE** Leaving dirt and dust flying in its wake, the sparse conditions that the Spitfire squadrons operated in around northern Australia is clearly demonstrated by aircraft 'L', probably from No 54 Sqn, as is the need for large Vokes tropical carburettor filters under the nose of the fighters. Note the areas around the roundels that have been overpainted in fresh camouflage paint



By mid-1943, Japanese air raids on the Australian mainland were becoming more infrequent, although concealing the air strips from potential attack was still paramount as illustrated by this carefully concealed Spitfire Mk Vc, DL-Z of No 54 Sqn (RAF) in its bay at Darwin. Note that the RAF serial number, (in the BS-range), is still in place in Medium Sea Grey. The RAF squadron operated under RAAF control in the defence of the northern territory



A pair of Spitfire pilots congratulate each other following a successful mission in front of a Mk Vc coded 'V'. Again note the extensive camouflage employed to hide the aircraft from Japanese air attack



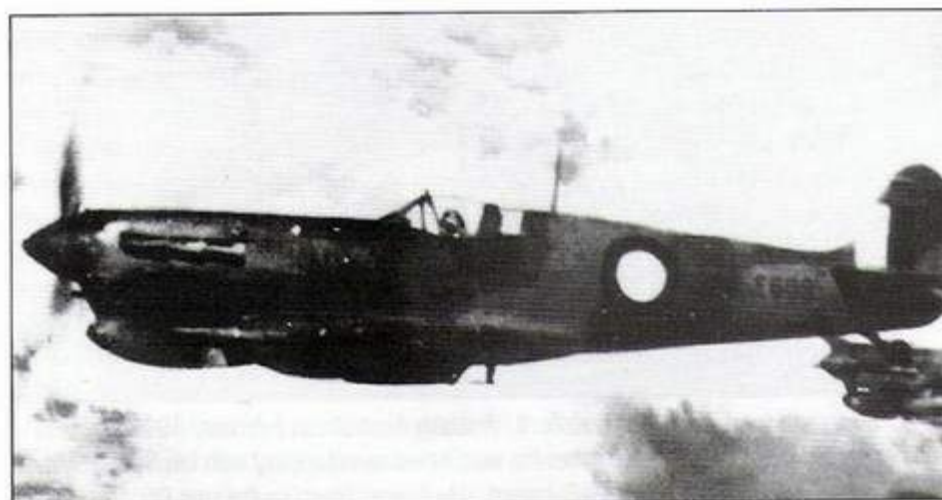
Close-up of the 'noseart' on Spitfire Mk Vc, A58-236, QY-G, 'Junior' of No 452 Sqn, flown by Plt Off 'Junior' Beaton, based at Darwin mid-1943



Spitfire Mk Vc, A58-215, DL-N of No 54 Sqn circa mid-1943. Note the Medium Sea Grey squadron codes and white individual aircraft letter peculiar to this unit and the strip of lighter paint on the rear fuselage where the original RAF serial, (LZ865), has been overpainted and the RAAF one applied



A58-254, QY-V of No 452 Sqn, one of the last Spitfire Mk Vcs to be delivered. Note the contrast between the upper surface camouflage colours, indicating an RAAF Foliage Green and RAF Dark Earth scheme, and the stencil-style serial number presentation



Spitfire Mk Vcs on patrol over Darwin in mid-1943. The aircraft in the foreground still retains its RAF serial number, EE608, and no squadron codes have yet been applied



No 452 Squadron Spitfire Mk Vc scrambling from one of the dusty Darwin strips in mid-1943. The aircraft was probably coded QY-W but doesn't appear to have had the white wing leading edge stripes added yet



This unidentified Spitfire Mk Vc, simply coded 'L', appears to have a damaged wingtip, possibly caused by one of the frequent landing accidents initially suffered by the type. Note the flaps still in the 'fully down' position



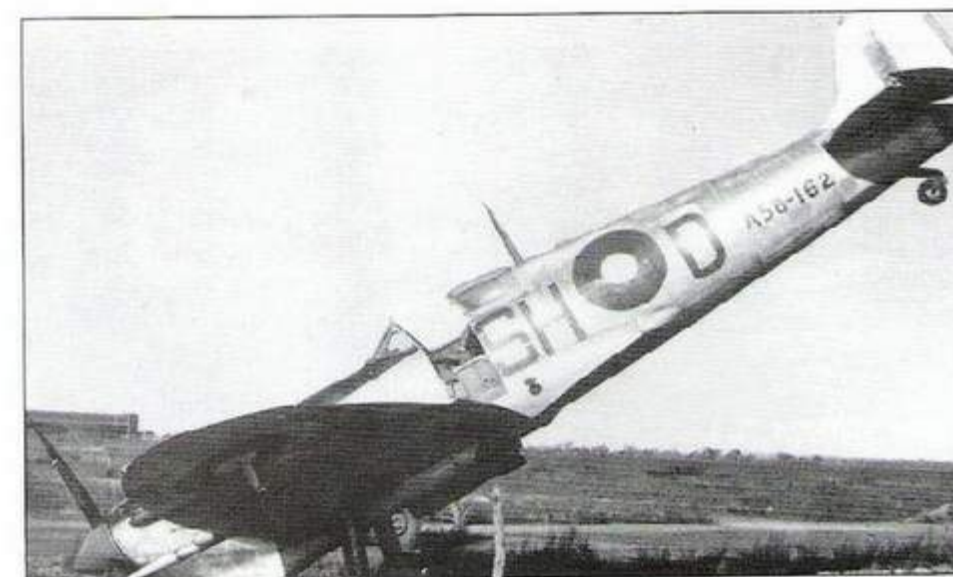
In a scene repeated over almost every Allied airfield, no matter in what Theatre of Operations, ground crew assist a No 457 Squadron pilot, in ZP-U, as he taxis out at the start of another sortie, his view restricted by the Spitfire's long nose. Note the low contrast between the upper surface camouflage colours possibly indicating a full RAAF Foliage Green and Earth Brown repaint. The RAAF serial number is still awaiting application



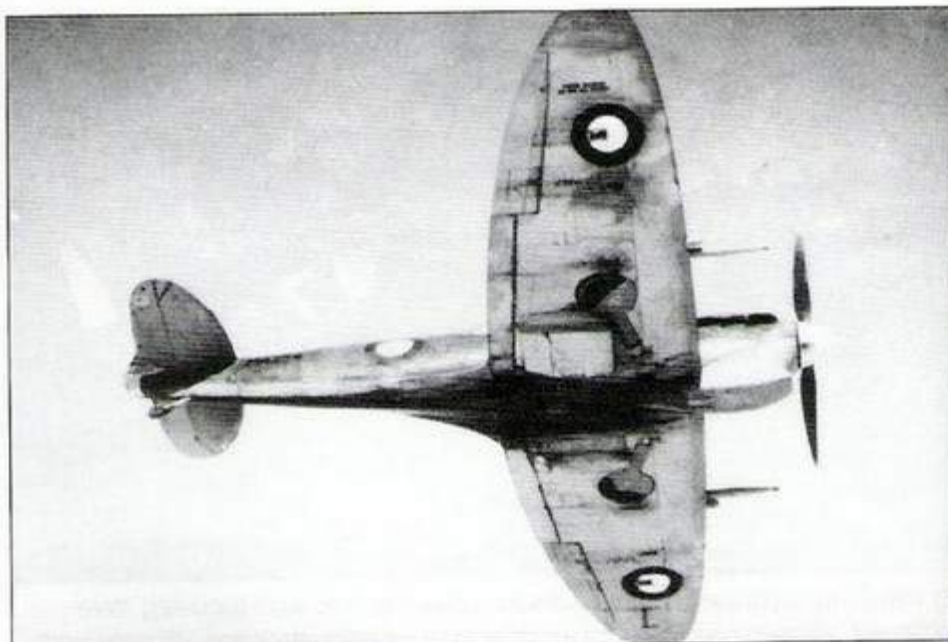
Sporting what appears to be a low-contrast Foliage Green/Earth Brown camouflage scheme, this Spitfire Mk Vc of No 457 Sqn, after possibly running out of fuel following a dogfight, awaits the attention of ground crew to see if it can be made airworthy again



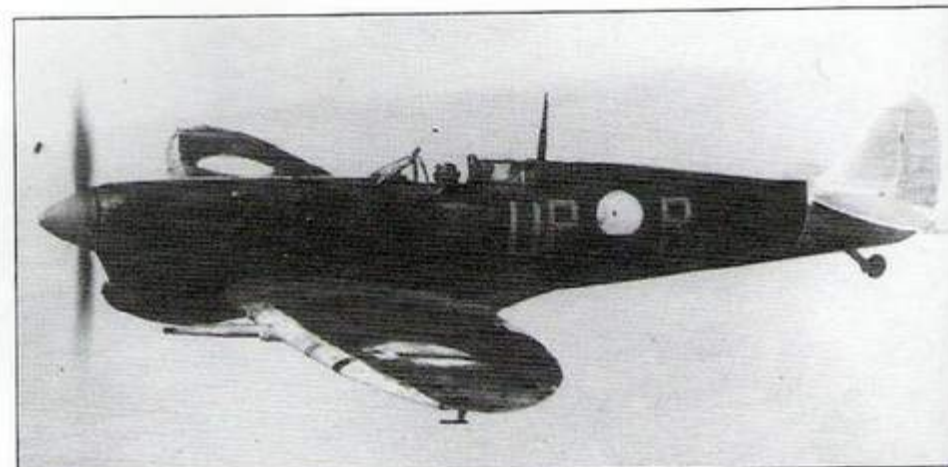
No 85 Squadron was formed at Guildford, Western Australia in February 1943 and retained its Spitfire Mk Vcs throughout the war, never re-equipping with the Spitfire Mk VIII. This particular Spitfire, A58-248, coded SH-Z, was flown by the unit CO, Sqn Ldr Ken James and was photographed in late 1944 after the unit's home-based fighters had been stripped of their camouflage



Another landing accident at Guildford, No 85 Squadron's A58-162, coded SH-D, on its nose. Note what appears to be a red spinner



This Mk Vc, still carrying its RAF serial number MA354, illustrates well the effect of the harsh climate conditions that the RAAF Spitfires had to endure. Note typical discolouration under the fuselage centre section and that some of the original stencilling still remains on the outer wings



A No 79 Sqn Spitfire Mk Vc, UP-R, circa late-1943, operating out of Goodenough Island illustrates the white tail surfaces applied as a recognition aid for the New Guinea area. The low-contrast upper surface camouflage possibly consisted of Foliage Green and Earth Brown or perhaps Foliage Green and Dark Green. The under surfaces would have been the original Azure Blue or RAAF Sky Blue



No 85 Sqn Spitfire Mk Vc, A58-137, SH-W, photographed at Guildford in late 1944, following a collision with another Spitfire. No 85 was the only RAAF Spitfire squadron to remain in Australia throughout the war, flying patrols over the west of the country



A pair of No 85 Sqn Spitfires on a sortie from Pearce, WA, in early 1945, with A58-16, SH-R nearest the camera. Note the black anti-glare panel and Aluminium painted fabric flying surfaces of these 'silver' machines



were delivered at regular intervals between January and November 1943.

All the Spitfires delivered were new-build machines and with just one exception were Spitfire Mk Vcs, the single odd example, A58-163, being an Mk Vb. The Royal Australian Air Force serial prefix for the Spitfire was A58, and all but one pair of Spitfires in the serial number block A58-1 to A58-185, were powered by the high-rated Merlin 46; A58-158 to A58-159 had the medium-rated Merlin 45s; whilst all but five from A58-200 onwards, had the similarly rated Merlin 50 or 55 engines – the former incorporating a 'Negative G' carburettor, added from experience gained during the Battle of Britain, and the latter with a two-piece cylinder and automatic boost control. Eleven Spitfires failed to make the trip to Australia when their ship the *SS Silver Beech* was torpedoed en route in April 1943, whilst another Mk Vc, (EE731), arrived in Australia but was never allocated an A58-range number.

The new Spitfire squadrons were to be formed into No 1 Fighter Wing, RAAF, (often referred to as 'The Churchill Wing'). The first to form was No 54 Sqn, with the other two following a month later. By the time the logistics had been completed, it was January 1943 before the Wing established itself at Darwin, by which time the Japanese raids were much reduced.

A Slow Start

Upon their arrival in Australia, the Spitfires were reassembled at Laverton and most were repainted in more appropriate camouflage colours. It was here that the first of a series of problems would delay the Spitfire's entry into service. There was confusion in the Spitfire's specifications and where a number of parts went. Crews assembling the airframes discovered some variations in the aircraft themselves. Three different types of elevator construction were noted, as were two styles of rudder construction, either metal or wooden framed, both with fabric covering. Additionally, although most aircraft had pressurised fuel tanks, some did not! Added to this were numerous smaller variations amongst the airframes!

Although these problems were overcome, the Spitfire was never deemed



entirely suitable for operations in Australia's north due to its tendency to overheat on the ground. Pilots were instructed to minimise the running time of the Merlin on the ground before take-off and to keep taxiing to a minimum – towing was to be used instead, whenever possible. In addition, the Spitfire's restricted range and relatively fragile narrow track undercarriage was the cause for concern by many RAAF pilots new to the type. Landing accidents were to account for a large number of losses, especially as the Spitfires were expected to operate from roughly prepared strips. It was discovered, through trial and error, that the three point, full-stall landing, was not the preferred method as had been taught, but instead, a powered approach with a 'roller touchdown', which substantially reduced the number of accidents.

It does need to be stated that the serviceability of the Spitfires was no worse than any other type new to the RAAF, although initially there were problems with the lack of spares. Once these shortcomings had been resolved, its combat capability was soon demonstrated. This was to improve greatly with the later introduction of the Mk VIII with its greater agility at altitude.

In addition to the three RAAF squadrons already mentioned, two further units were to operate Spitfires within Australia, No 79 with Spitfire Vcs based at Laverton in April 1943, and No 85 Sqn, formed at Guildford in February 1943, and which operated in Western Australia. This latter squadron retained its Spitfire Mk Vcs throughout the war, never re-equipping with the later Mk VIIIs.

With No 1 ('Churchill') Wing finally established, (comprising the RAF's No 54 Sqn and the two RAAF squadrons, Nos 452 and 457), by early February 1943, all three squadrons had arrived in the area and the defence of Darwin was now firmly in the hands of the newly arrived Spitfire Mk Vcs. The Wing was commanded by Wg Cdr Clive Caldwell, who at the time was Australia's top scoring ace, having downed 201/2 German and Italian types whilst serving with the Desert Air Force on P-40B Tomahawks. His time flying Spitfires would see another eight added to his tally.



TOP Another photograph of No 85 Squadron Spitfire Mk Vcs on patrol from Pearce, WA, in 1945. A58-16, SH•R is again nearest the camera, but note SH•N, A58-72, in the background, which appears to have a white tail empennage and red rudder! **MIDDLE** A58-104 serving with the Central Gunnery School at Cressy, Victoria, mid to late 1945, which saw the partial removal of the aircraft's 20mm cannon barrels to improve performance. Stripped of its camouflage whilst originally serving with No 85 Sqn, A58-104 illustrates the gradual but ultimately extensive weathering it suffered to its natural metal finish over a number of months **BOTTOM** Another Central Gunnery School Spitfire Mk Vc, A58-173 circa late 1945. Note again the partial removal of the 20mm cannon barrels and the white tail empennage



First combats

In an effort to counter the Japanese threat, each squadron was based separately, with No 54 Sqn in Darwin itself, No 452 Sqn at Strauss Field, south of the city, and No 457 Sqn at nearby Livingstone. Initially, operations were of mixed success, stemming from the Spitfire's limited fuel capacity and a lack of organised tactics. Despite these teething problems, Flt Lt Foster of No 54 Sqn downed a Ki-46 'Dinah' off the coast of Darwin in mid-February.

However, it was to be a full month before the Spitfires were in action again, when No 54 Sqn intercepted a mixed formation consisting of A6M2 'Zeros' and B5N 'Kates', claiming three enemy aircraft destroyed for no loss. No 457 Sqn claimed its first 'kill' a few days later with another Ki-46 'Dinah'.

Interception of Japanese raids continued throughout March with the largest occurring on the 15th, when all three squadrons rose to meet a force of twenty Mitsubishi G4M1 'Betty' bombers and twenty-seven escorting 'Zeros'. A ferocious dogfight ensued resulting in the destruction of six bombers and two fighters at the cost of four Spitfires. However, many Spitfire pilots landed with less than three gallons of fuel in their tanks! More problems were to follow for the fledgling Spitfire force.

On 2 May the Japanese again attacked Darwin and despite being picked up on radar flying at 30,000ft, the force of eighteen bombers and twenty-seven fighters was not intercepted until after they had dropped their bombs. Despite having advanced warning of their approach, the Spitfires of No 1 Wing only managed to down two aircraft, but worse was to come. Thirteen Spitfires were lost in the action – five shot down, five due to fuel starvation and three because of engine failure. Of the latter eight, all but two were recovered.

Many within Australia now regarded the Spitfire as a failure, and sought for the type to be replaced by the more reliable American P-40 Warhawk. Despite the criticism levelled against the Spitfires, the main problem stemmed from the ever increasing distances the aircraft were asked to fly

from their bases to intercept the bombers, and once there, dogfighting with the nimble 'Zeros' further reduced the Spitfire's meagre fuel load. For many pilots, returning to their base with enough fuel at the end of a mission was purely up to chance.

An Advisory War Council set up an official enquiry after these events and the Chief of the Air Staff, Air Marshall George Jones, submitted his conclusions and solutions to the 'Spitfire Problem' as it was termed in the daily press at the time. The solutions implemented were to fit auxilliary fuel tanks to the Spitfire and to ban dogfighting. From now on, the Wing's Spitfires were to 'bounce' Japanese formations from above in slashing attacks only.

A Change of Tactics

The 2 May losses to enemy action stemmed from the lack of correct tactics against the more manoeuvrable Mitsubishi A6M2 'Zero' and those to fuel starvation from the Spitfire's relatively short range – the combat taking place well out from the coast. The new tactics and the fitting of 30 gallon slipper tanks helped to redress the balance, and were put to the test during the next raid on Darwin on 20 June. 'Zeros' escorting twenty-five bombers were intercepted by all three Spitfire squadrons, with the result that sixteen enemy aircraft were shot down for the loss of only two Spitfires. It was during this engagement that Wg Cdr Caldwell became an 'ace' again, downing his fifth Japanese 'kill', adding to his 'kills' already obtained in North Africa.

Following these losses, the Japanese effectively suspended operations in the Darwin area, the number and size of Japanese raids gradually diminished as the summer wore on, and it became increasingly obvious that the threat of invasion was finally receding. By mid-1943, it was accepted that the Spitfires of No 1 Wing had achieved air superiority in the area.

However, occasional attacks and reconnaissance flights by the Japanese continued. The largest by this stage, was in September, when a solitary 'Dinah' escorted by some twenty 'Zeros' flew a reconnaissance mission over Darwin. Such a large escort was due to the fact that solitary 'Dinahs' had a habit of not returning to their home base due to interception by Spitfires!

It was around this time, in July 1943, that the third, purely RAAF Spitfire Squadron, No 79, was formed, again on Spitfire Mk Vcs, and began operations from Goodenough Island in the New Guinea area.

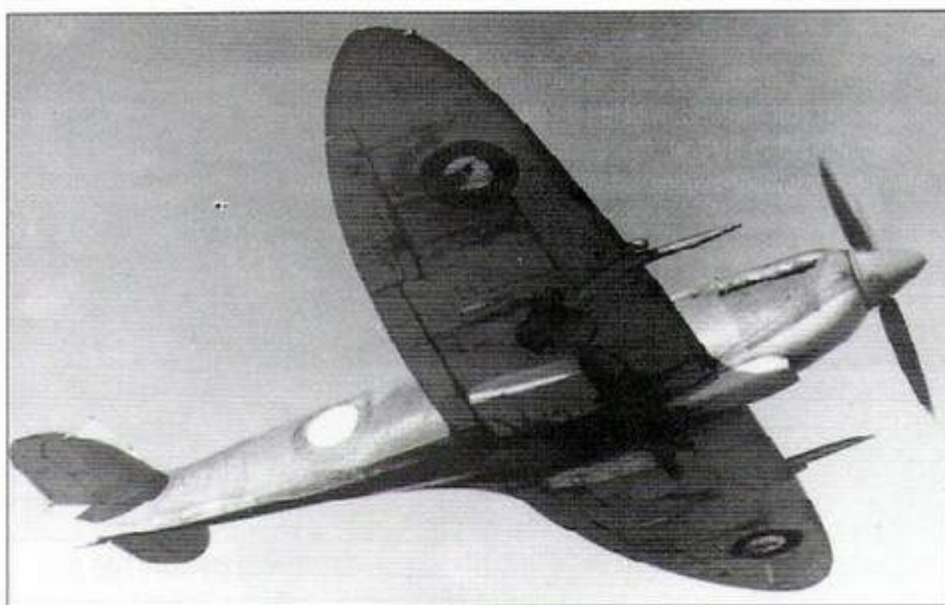
By 1944, No 1 Wing underwent a major reorganisation following the reduced threat in the region, with Nos 452 and 457 Squadrons commencing their 'island hopping' campaign to Morotai, whilst No 54 Sqn was joined by two newly established RAF squadrons, Nos 548 and 549, for operations in the Darwin area. Over the following months all the units would be trading their Spitfire Mk Vcs for the improved performance of the Mk VIII.

Merlins Unlimited

Considered by many to be the ultimate Merlin-engined development of the Spitfire, the Mk VIII first arrived in Australia in October 1943 and by the end of the year some twenty-six examples had been delivered. The major-



TOP Spitfire LF Mk VIII, of No 79 Sqn, coded UP-Z. The 'light' upper surfaces suggest that this might have been repainted in the controversial 'light green' scheme – or was it just well-weathered Ocean Grey and Dark Green? **ABOVE** These Spitfire LF Mk VIIIs were photographed on a publicity flight shortly after their delivery to Australia. The aircraft have yet to be allocated to a frontline squadron, hence the lack of codes, but the one nearest the camera is A58-402



Spitfire LF Mk VIII, A58-315, served as a trials aircraft following its delivery in October 1943. Having survived the war, the Spitfire was converted to components in April 1946. Note the salient features of the Mk VIII, including the symmetrical radiator layout and the compact Aero Vee universal carburettor intake



Another single-shade Foliage Green, (or weathered low-contrast Earth Brown/Foliage Green), upper surface scheme Spitfire LF Mk VIII, A58-419, ZP•Y, this time of No 457 Sqn, making a low-level pass over its base, probably Morotai, in late 1944



Contrasting with the single-shade Foliage Green, these Spitfire LF Mk VIII appear to be finished in the low-contrast Earth Brown/Foliage Green upper surface scheme. The two identifiable airframes in the foreground are A58-315 and A58-395. Note the roundel style with the large diameter white centre



Another candidate for the controversial 'light green' upper surface scheme theorists, A58-517, UP•F, 'Hava Go Jo', of No 79 Sqn, flown Flt Lt Norm Smithell from Morotai in April 1945. The nose art comprised a large pink elephant just forward of the cockpit. Note the white tail empennage and the bright green propeller spinner identifying B Flight



Covered with the tell-tale greyish exhaust discolouration caused by a lean-running engine, LF Mk VIII, A58-516, QY•T of No 452 Sqn, may have been refinished in the single shade Foliage Green upper surfaces? Under surfaces would have been RAAF Sky Blue. Note the full span white wing leading edges, 'Ace of Spades' badge on the rudder and what is thought to be a red spinner. There appears to be the faded remains of two Japanese flags ('kills'?) under the windscreen



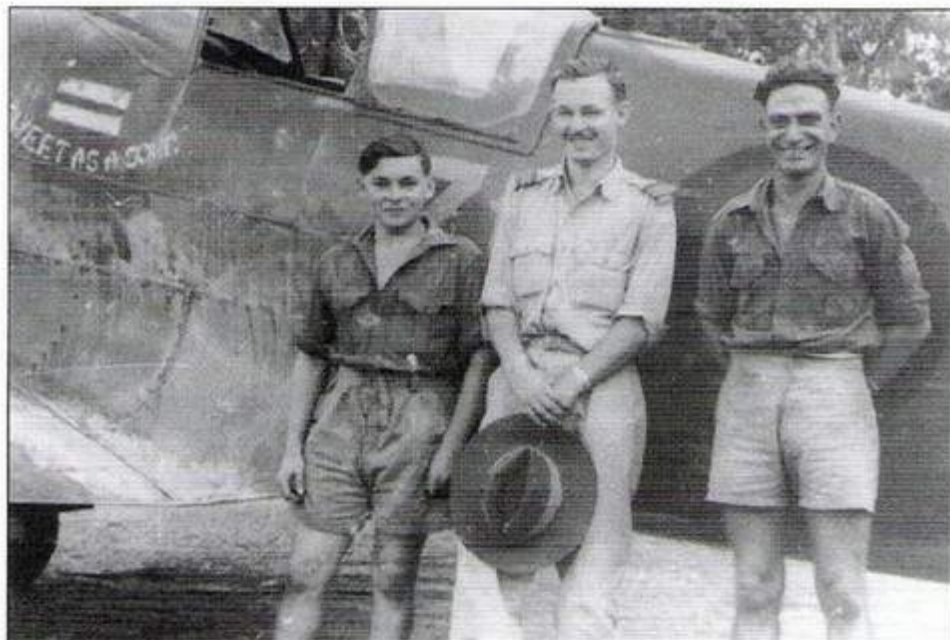
Group Captain Clive Caldwell with one of his Spitfire LF Mk VIII, possibly A58-433, at Morotai in late 1944/early 1945. Note the 'scoreboard' and Group Captain's pennant under the windscreen and 45 gallon slipper tank – to help extend the Spitfire's relative short range performance



Seconds from touchdown this Spitfire LF Mk VIII, A58-457, UP•Z, is camouflaged in what appears to be a single shade of RAAF Foliage Green on the upper surfaces with RAAF Sky Blue undersides, although this is still open to debate by many enthusiasts, and readers' comments are welcome



Another example of No 79 Sqn Spitfire nose art, on the aircraft flown by Flt Sgt Vivian Pollard. Pollard had previously served with the Army in Greece and Crete; hence the slouch-wearing brown kangaroo on a white background and the red 'Dig' outlined in white



'Sweet as a Song', a Spitfire LF Mk VIII, A58-457, ZP•Z, flown by Sqn Ldr Tom Trimble, CO of No 457 Squadron, pictured here with two of his tireless ground crew. Note the Squadron Leader's pennant under the windscreen



Flying shot of Spitfire HF Mk VIII, A58-609, ZP•S of No 457 Sqn, in standard RAF Day Fighter scheme with Sky spinner and rear fuselage tail band. note the 'Ace of Spades' badge on the rudder



Spitfire HF Mk VIII, A58-606, ZP•W of No 457 Sqn surrounded by ground crew following the completion of another sortie. Note the initial small style of the 'Grey Nurse' sharkmouth design



Another small-sharkmouthed No 457 Squadron HF Mk VIII, being refuelled at Sattler Field near Darwin in February 1945. Although not fitted often, when additional range was required, late in the war, 45 gallon slipper tanks were utilised



Another No 457 Sqn Spitfire HF Mk VIII, A58-615, ZP•Y, effectively illustrating the reason for the need for long range slipper tanks – over the sea...



...and the possible result of running out of fuel – A58-617, ZP•G of No 457 Sqn, following a 'wheels-up' landing somewhat short of its base!



A pair of No 457 Squadron Spitfire HF Mk VIIIs, ZP•Q and ZP•N, clearly illustrating the changeover period from the original small 'sharkmouth' design to the larger one circa spring 1945. Note the 'Ace of Spades' playing card on the rudder of both aircraft



A close-up view of Sqn Ldr Bobby Gibbs' replacement Spitfire HF Mk VIII, possibly A58-602, with his initials forward of the fuselage roundel. This photo illustrates the state of the camouflage finish and weathering that all No 80 Wing's aircraft endured in the harsh 'out-back' conditions



ity of the 410 examples arrived during 1944, with a further fifty-eight being delivered in early 1945. Unfortunately, some 120 of these Spitfires went straight into storage without ever being issued to operational squadrons. There they remained until 1949, whereupon many were simply scrapped!

The first 251 Spitfire Mk VIIIs delivered to the RAAF, between October 1943 and August 1944, (A58-300 to A58-550), were LE.VIIIs, with low-altitude rated Merlin 66 engines. Recent research shows that there were some anomalies and in fact nine of these aircraft, (A58-424 to A58-427, A58-453 to A58-455, A58-471 and A58-538), were listed by the RAF as being F.VIII models, fitted with the lower-altitude altitude Merlin 66. Added to this, four of these Spitfires were completed as F.VIIIs, but were manufactured within a batch of photo reconnaissance PR.XIs, (RAF serials PA838 to PA961), constructed from November 1943.

These improved Mk VIII variants were first issued to RAAF squadrons in April 1944, with Nos 79, 452 and 457 converting by the latter half of 1944. No 54 Sqn (RAF) had received Mk VIIIs a few months earlier. Additionally the two new RAF Spitfire squadrons, Nos 548 and 549, as part of Churchill's earlier promise to operate *three* squadrons in the defence of Darwin, had formed at Lawnton, Queensland, on Mk VIIIs in December 1943. They were to replace the RAAF's Nos 79, 452 and 457 Squadrons, which were now allocated to McArthur's advancing forces in the islands north of Australia.

For the first few months, the two new RAF squadrons had little to do and pilots merely logged time in local Tiger Moths and Wirraways. It was therefore a number of months before either were deemed to be combat ready, by which time, when No 549 Sqn moved to Darwin, Japanese opposition in the area had practically ceased. Added to this, was the loss of the CO of 548 Sqn, Sqn Ldr W Wright, whose Spitfire collided with another during a training exercise.

The almost complete lack of enemy opposition and shortage of spares for the Spitfire Mk VIIIs saw that the squadrons sent to Darwin did very little and morale suffered accordingly. With the war moving beyond the reach of the Australian based squadrons, by the end of 1944, Spitfire operations in Northern Australia had all but ended as the war entered its final year.

Beyond Australia

With the three RAF Squadrons defending Northern Australia from 1944, RAAF units were now 'free' to operate 'overseas' and the Spitfire squadrons were tasked to operate from the islands to the north of Australia in an effort to improve the operational radius.

One of the first RAAF squadrons to move was No 79, with their Spitfire Vcs, transferred to Goodenough Island off New Guinea in early June 1943. Operating alongside the Spitfire unit were two RAAF Kittyhawk squadrons, Nos 76 and 77, the three squadrons forming No 73 (Fighter) Wing. The Wing's intended role was to interdict enemy shipping in the area and attack enemy bases in New Britain. Additionally they were to provide escort to bombers sent out on these raids.

However, the Spitfire's short range saw that most of these missions were

to be performed by the longer-ranged Kittyhawks of the Wing, leaving the Spitfires to fly top cover over the base in their absence. By August, the squadron had been relocated to Kiriwina Island as part of the defensive chain, although its pilots were to see little action until October 1943, when Flt Sgt Ian Callister claimed a 'kill' during the squadron's involvement in operations over Rabul.

By January 1944, No 79 Sqn was participating in some of the largest RAAF strikes yet undertaken, with eight of its Spitfires escorting thirty-two Beauforts and thirty-seven Kittyhawks in an unopposed daylight attack against Japanese positions at Lindenhaven in New Guinea.

With the Allied advance gaining pace northwards to the Philippines, No 79 Sqn moved its twenty-four Spitfires to Los Negros Island in March 1944 to provide air cover for the invasion of the Admiralty Islands. Fortunately, the invasion was over within three days and not a single enemy fighter was encountered during the operation. Led by Wing Commander Gordon Steege, the Spitfires of 79 Sqn were the first to fly north over the Equator. They were also the first to participate in a 'fishing operation', making a reconnaissance flight for a bomb-carrying Kittyhawk to attack a large school of fish – enough were picked up by the rescue launch to feed the Wing!



As described earlier, by April 1944, Nos 79, 452 and 457 Sqns had been issued with Spitfire Mk VIIIs, and these quickly replaced their earlier Mk Vcs, the latter flying their last mission with Nos 452 and 457 Sqns on 1 April 1944, when they joined with No 54 Sqn and No 31 Squadron's Beaufighters on a raid to Wetan Island. One month later, Nos 54 and 457 Sqns were temporarily detached with their Spitfires to Exmouth Gulf on the west of Australia to provide a Combat Air Patrol, (CAP), for Allied shipping being refuelled in the area, during which they operated from Sattler Field south of Darwin.

However they were replaced with two new RAF Spitfire units, Nos 548 and 549 Sqns, which were formed specifically to defend the Darwin area.

TOP A sharkmouthed No 457 Squadron Spitfire HF Mk VIII taxis out at the start of another mission. There were slight variations in the shape and style of the sharkmouths on the unit's Spitfires as comparison with this view and photos of other squadron examples will reveal. The colours of this sharkmouth were black, white and red. **ABOVE** Wg Cdr Glenn Cooper, 'talking tactics' with a fellow pilot in front of a sharkmouthed 'Grey Nurse' Spitfire HF Mk VIII. No 457 Sqn introduced the sharkmouth design whilst at Sattler Field near Darwin. Note what appear to be two sets of 'eyes' on the cowling



Nos 54 and 457 Sqns remained in Australia until early 1945, when No 457 was ordered to take its Spitfire Mk VIIIs to the Island of Morotai in the Halmaheras Group, along with Nos 79 and 452 Squadrons and an assortment of other RAAF units.

The island had been successfully invaded in September 1944 and prepared for the influx of a host of squadrons. Selected due to its parallel airstrips, Wama and Pitoe, Morotai provided a central location from which air operations against the Philippines and the Dutch East Indies could be conducted.

The RAAF Spitfire squadrons were united to form No 80 (Fighter) Wing at Morotai, however, by now it was becoming clear that the war would soon be over and in the final few months, the Wing was to see relatively less action than before, as were the neighbouring RAAF's Kittyhawks, which formed part of the newly established 1st Tactical Air Force.

Operations consisted mainly of 'mopping up' and attacking beleaguered Japanese island outposts, which had been avoided during the main advance. Such operations were issued by the Supreme Allied Commander in the Pacific Theatre, General Douglas MacArthur, and resulted in the Australian effort falling behind the main American push to the Philippines. Such air strikes were to result in a number of pilots being 'lost' within the Spitfire squadrons and many believed that such a high casualty rate was not worthwhile when compared to the insignificant gains made during the raids.

The situation arose due to MacArthur's obsessive desire to 'return to the Philippines' and so fulfil the promise he had made when leaving three years earlier. His return was to be seen as his, and his alone, and he didn't want



any Australians sharing in his glory! This obsessive singled-minded attitude led to a 'mutiny' among senior RAAF officers – including Clive Caldwell – who resigned their commissions in protest. However, the event eventually blew over, but not without leaving its mark within the Australian services involved in the campaign.

RAAF Spitfire operations came to a conclusion in May and June 1945 with 'Operation Oboe' – the codename for attacks in the Borneo area. No 79 Sqn remained on Morotai until its disbandment in October, whilst No 452 Sqn went to Tarakan and No 457 Sqn to Labuan Island, until the end of hostilities in August when they were disbanded three months later. During these final months of operations the Spitfire squadrons were mainly flying ground support missions, including fighter/bomber strikes, although a Spitfire of No 452 Sqn claimed one final victory during a Japanese raid on Balikpapan on the night of 24 July.

The Spitfire in RAAF service never achieved the same combat record and high regard that it did in the European and Mediterranean Theatres, and was not regarded as the most important fighter in the RAAF's inventory, which fell to the more durable and long-ranged P-40 Kittyhawk. However, the Spitfire did achieve air superiority over Darwin and helped defend the port during the second phase of concerted Japanese bombing attacks – and that is essentially what the Spitfire was designed to do, no matter where it was in combat. **AM**



TOP A No 457 Squadron 'Grey Nurse' Spitfire HF Mk VIII winds up her Merlin for the benefit of the photographer. By this stage of the war, the larger shape of 'shark-mouth' had become standard throughout the unit, although in this case it was stylised even more, with additional shading on the teeth! Note the 45 gallon slipper tank, indicating a 'long' sortie over the sea perhaps? **MIDDLE** An often used, but classic photo of a No 457 Squadron Spitfire HF Mk VIII, A58-672, ZP-Y, in its natural element and showing the extensive weathering to the camouflage suffered by these machines. **BOTTOM** A view of the sparse conditions on Morotai, where many RAAF Spitfire squadrons were to operate from late in the war. Spitfire Mk VIIIs of No 457 Sqn can be seen taxiing out from their hardstandings at the start of another sortie. Note the large number of Spitfires awaiting taxiing clearance in the background.

- Spitfire Mk Vc, BS234, CR•C, flown by (then) Wing Commander Clive R Caldwell, Wing Leader, No.1 Fighter Wing, Darwin, May/June 1943



Spitfire Colours Down Under

Neil Robinson looks at the colour schemes of the RAAF Spitfires and models a quintet of Aussie Spitfires

■ COMING DIRECTLY OFF THE CASTLE BROMWICH PRODUCTION line and from storage at MUs, the majority of the tropicalised Spitfire Mk Vcs sent to Australia had been earmarked for use in the Middle East and as such appear to have been camouflaged in the RAF Tropical Scheme of Dark Earth and Middle Stone upper surfaces with Azure Blue undersides. Contemporary reports that a few aircraft were finished in the RAF Day Fighter Scheme of Ocean Grey and Dark Green upper surfaces with Medium Sea Grey under surfaces, may account for the undersides of some aircraft looking lighter than others.

Despite the urgent need to get the Spitfires into combat as quickly as possible, once they had been uncrated and assembled at Laverton, it would seem that most of the RAF 'desert scheme' aircraft had the Middle Stone areas of the upper surfaces overpainted in RAAF Foliage Green. At the same time, the RAF roundels and fin flashes were altered into the RAAF blue/white style, usually by overpainting the red and yellow areas.

White wing leading edges were applied, generally from the cannon barrels outboard to the wing tip, but sometimes from the wing root to the cannon barrels or even all the way from the wing root full span to the wing tip. RAF serial numbers appear to have been retained at this stage, (the changeover to RAAF A58 range serials generally taking place during the autumn/winter), although there were exceptions, with Squadron codes – (DL for No 54, QY for No 452 and ZP for No 457) – painted in white or Medium Sea Grey, or in No 54's case, what appears to be a mixture of both!

Anomalies were frequent as might be expected with machines urgently rushed into service, and especially so after the aircraft had been in service for some months. It was also during the mid-1943 period that the official RAAF scheme of Foliage Green and Earth Brown upper surfaces and Sky Blue under surfaces was being introduced, the scheme being gradually applied to the Spitfires as they went through the usual major servicing procedures or following repairs and/or maintenance of 'normal' wear and tear.

In April 1943, a third, purely RAAF Spitfire Squadron, No 79, (coded UP), was formed, again on Spitfire Mk Vcs, and from July began operations from Goodenough Island in the New Guinea area. Going through the same camouflage

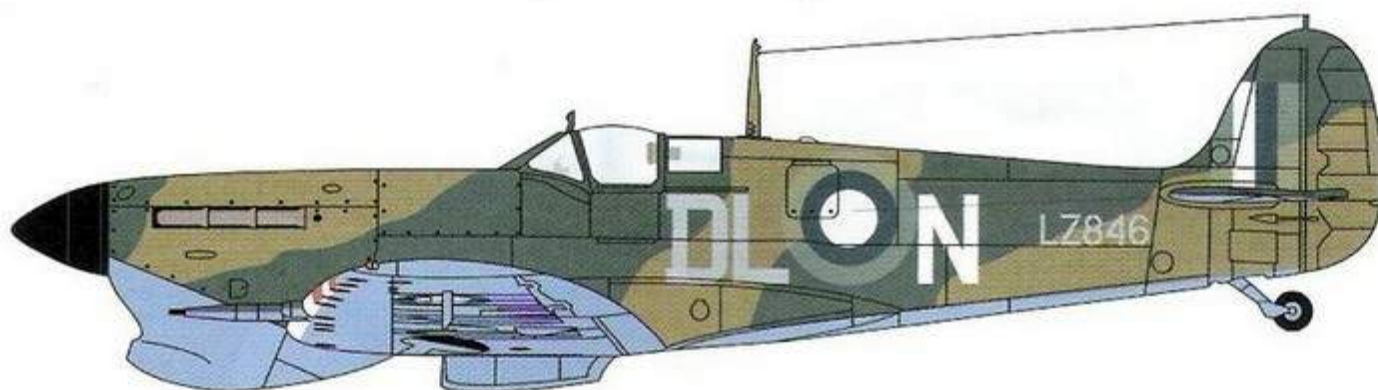
changes as the Darwin-based Spitfires, No 79's aircraft could be seen in a mixture of RAAF Foliage Green/RAF Dark Earth and Azure Blue, and RAAF Foliage Green/RAAF Earth Brown and RAAF Sky Blue schemes.

It is often possible to pick out the difference between aircraft in the 'mixed' RAF Dark Earth/RAAF Foliage Green finish and those in the full Australian scheme of RAAF Earth Brown/RAAF Foliage Green. The tonal variation between RAF Dark Earth and RAAF Foliage Green was much more marked, and for the most part the demarcation between the two colours on aircraft so finished was quite sharp. On the other hand, there was very little tonal difference between RAAF Earth Brown and RAAF Foliage Green, and aircraft so finished usually had a 'feathered' demarcation between the two colours. This makes it very difficult to distinguish between the colours, especially in b&w photos, so that Earth Brown/Foliage Green finished aircraft often appear to almost have single-coloured upper surfaces.

The fourth, purely RAAF Spitfire Squadron, No 85, was formed in February 1943, and remained in Australia throughout the war. The aircraft were at first camouflaged, but by mid-1944, most of the unit's Spitfires had been stripped back to bare natural metal with the fabric control surfaces painted Aluminium and matt black anti-glare panels. Squadron codes and RAAF A58 serial numbers were re-applied in black.

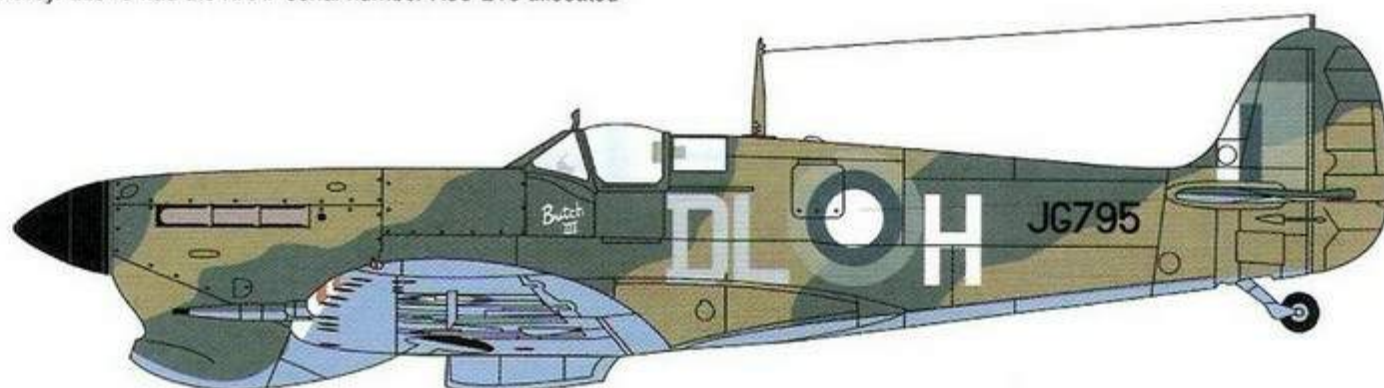
Over in the New





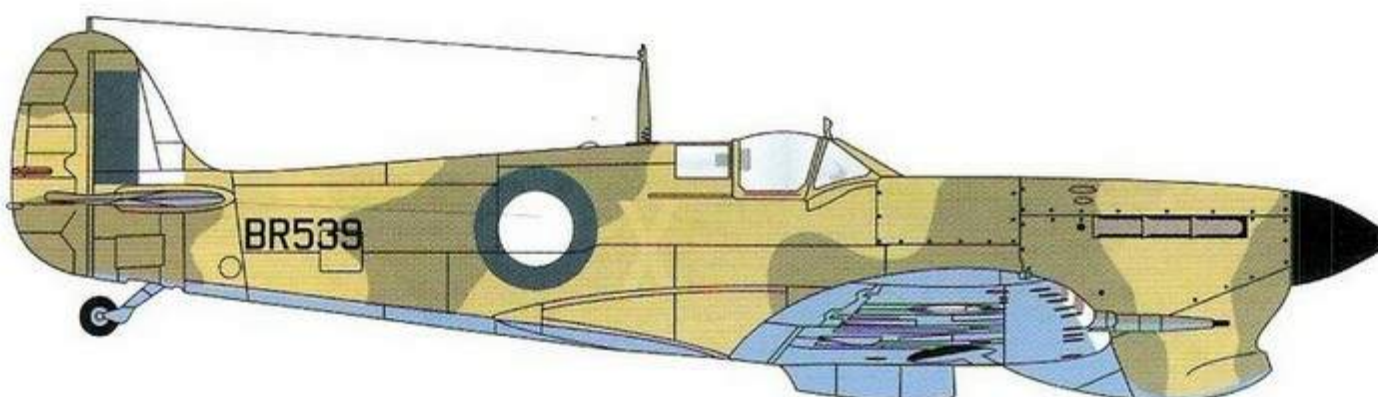
Spitfire Mk Vc, LZ846, DL-N of No 54 Sqn, RAF, Darwin, circa May/June 1943

Originally camouflaged in Dark Earth and Middle Stone upper surfaces with Azure Blue undersides, the Middle Stone areas were overpainted in RAAF Foliage Green. Note how the RAF roundels and fin flashes were altered into the RAAF blue/white style, by overpainting the red and yellow areas. White wing leading edges were applied, from the wing root to the outer machine gun port. An affectation peculiar to No 54 Sqn Spitfires, was the painting of the squadron codes in Medium Sea Grey and the individual aircraft letter in white. Note the Night spinner and retention of the RAF serial number, also painted in Medium Sea Grey. LZ846 had the RAAF serial number A58-215 allocated



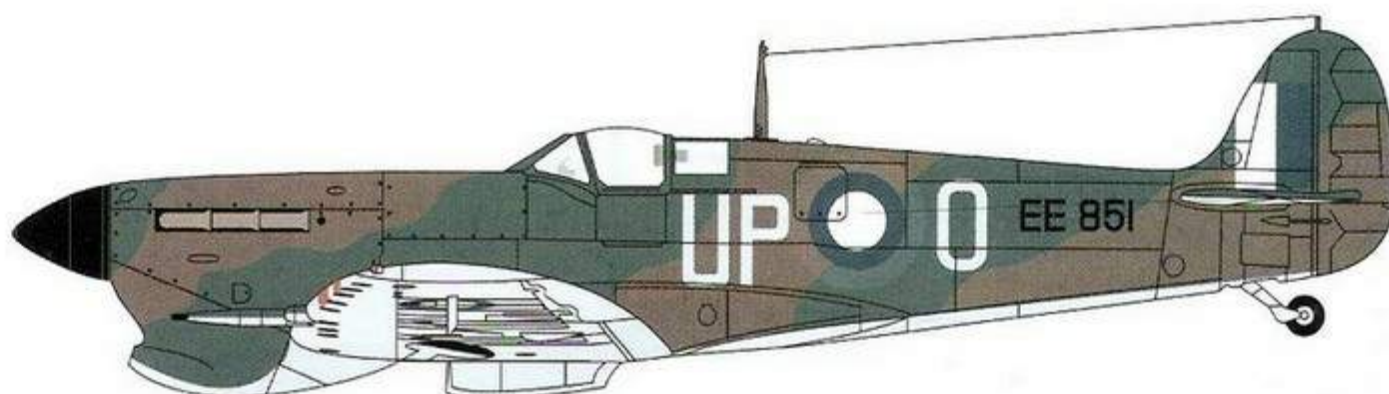
Spitfire Mk Vc, JG795, DL-H of No 54 Sqn, RAF, Darwin, early May 1943

As with the profile above, JG795 was originally camouflaged in Dark Earth and Middle Stone upper surfaces with Azure Blue undersides, but had the Middle Stone areas overpainted in RAAF Foliage Green. Note how the camouflage extends onto the Vokes tropical filter. The RAF roundels and fin flashes were again altered into the RAAF blue/white style, by overpainting the red and yellow areas. White wing leading edges were carried, from the wing root to the outer machine gun port. The Squadron codes were in Medium Sea Grey with the individual aircraft letter in white. Night spinner and retention of the RAF serial number, also in Night. Note the name 'Butch III' under the cockpit. JG795 had the RAAF serial number A58-174 allocated



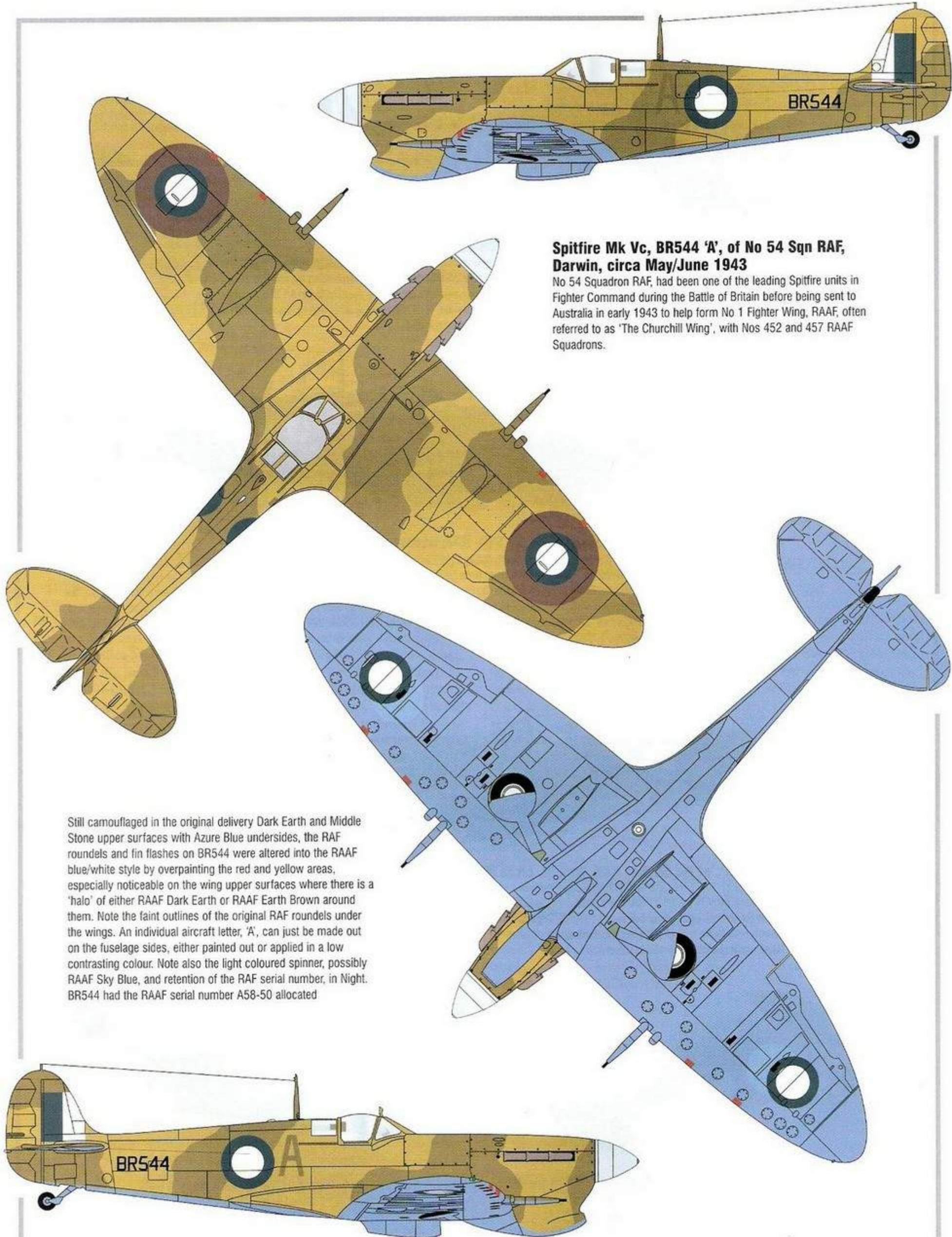
Spitfire Mk Vc, BR539 'X', of No 54 Sqn RAF, Darwin, circa May/June 1943

Still retaining its delivery scheme of Dark Earth and Middle Stone upper surfaces with Azure Blue undersides, the BR539 has not yet had any squadron codes applied although there is the faint outline of an individual aircraft letter, 'X' on the forward fuselage. The RAF roundels and fin flashes were altered into the RAAF blue/white style, but were of slightly larger proportions than the previous two profiles above. White wing leading edges were carried, again from the wing root to the outer machine gun port. Note the Night spinner and retention of the RAF serial number, also in Night. BR539 had the RAAF serial number A58-45 allocated



Spitfire Mk Vc, EE851, UP-O of No 79 Sqn, RAAF, Laverton, Western Australia, late May 1943

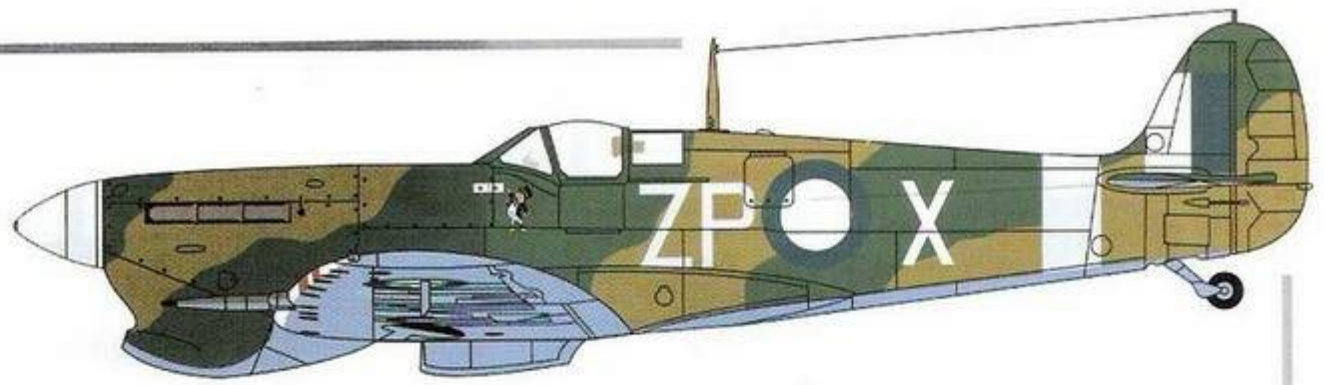
In addition to the first three Spitfire squadrons, (Nos 54, 452 and 457), two further units were formed to operate Spitfire Mk Vcs in Australia, Nos 79 and 85. No 79 Sqn was equipped with Spitfire Vcs in April 1943, and operated over Western Australia for the first few weeks. Originally camouflaged in the Dark Earth/Middle Stone/Azure Blue delivery scheme, the unit's aircraft were soon repainted in the RAAF low-contrast upper surface camouflage scheme of Foliage Green and Earth Brown. The under surfaces were repainted in RAAF Sky Blue as were the codes. White wing leading edges were not carried at this time. EE851 had the RAAF serial number A58-144 allocated



Spitfire Mk Vc, BR544 'A', of No 54 Sqn RAF, Darwin, circa May/June 1943

No 54 Squadron RAF, had been one of the leading Spitfire units in Fighter Command during the Battle of Britain before being sent to Australia in early 1943 to help form No 1 Fighter Wing, RAAF, often referred to as 'The Churchill Wing', with Nos 452 and 457 RAAF Squadrons.

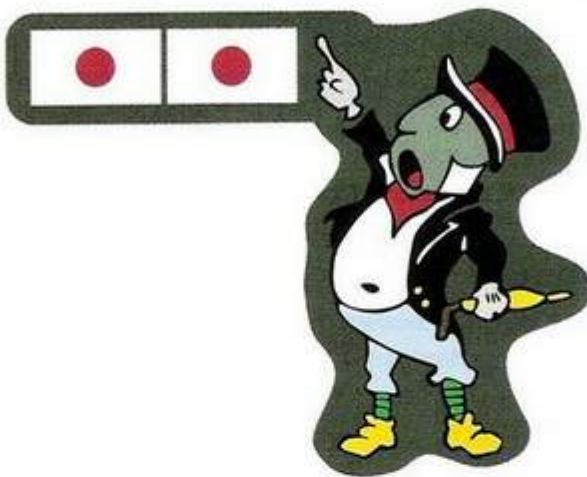
Still camouflaged in the original delivery Dark Earth and Middle Stone upper surfaces with Azure Blue undersides, the RAF roundels and fin flashes on BR544 were altered into the RAAF blue/white style by overpainting the red and yellow areas, especially noticeable on the wing upper surfaces where there is a 'halo' of either RAAF Dark Earth or RAAF Earth Brown around them. Note the faint outlines of the original RAF roundels under the wings. An individual aircraft letter, 'A', can just be made out on the fuselage sides, either painted out or applied in a low contrasting colour. Note also the light coloured spinner, possibly RAAF Sky Blue, and retention of the RAF serial number, in Night. BR544 had the RAAF serial number A58-50 allocated



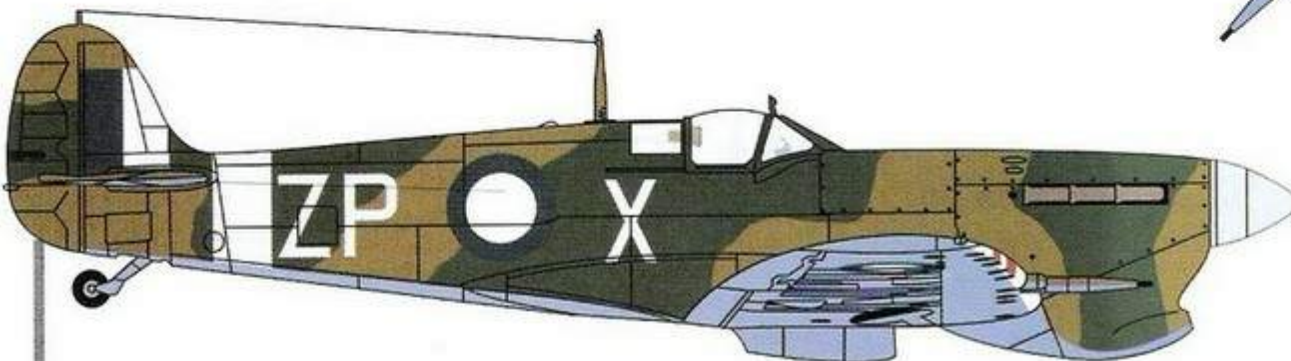
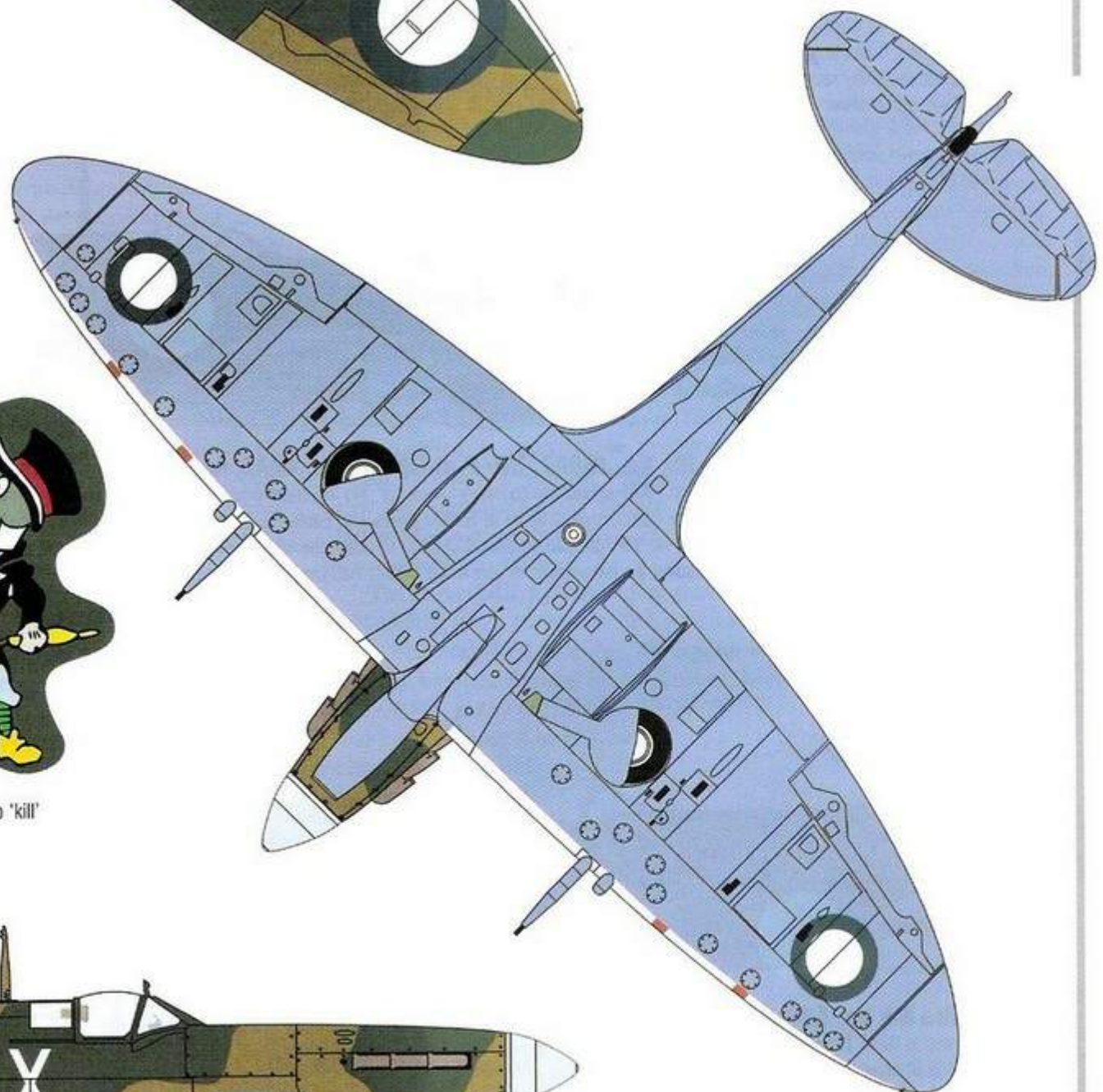
Spitfire Mk Vc, BS219, ZP-X of No 457 Sqn, RAAF, Darwin, circa June 1943, flown by Flg/Off 'Butch' Hamilton

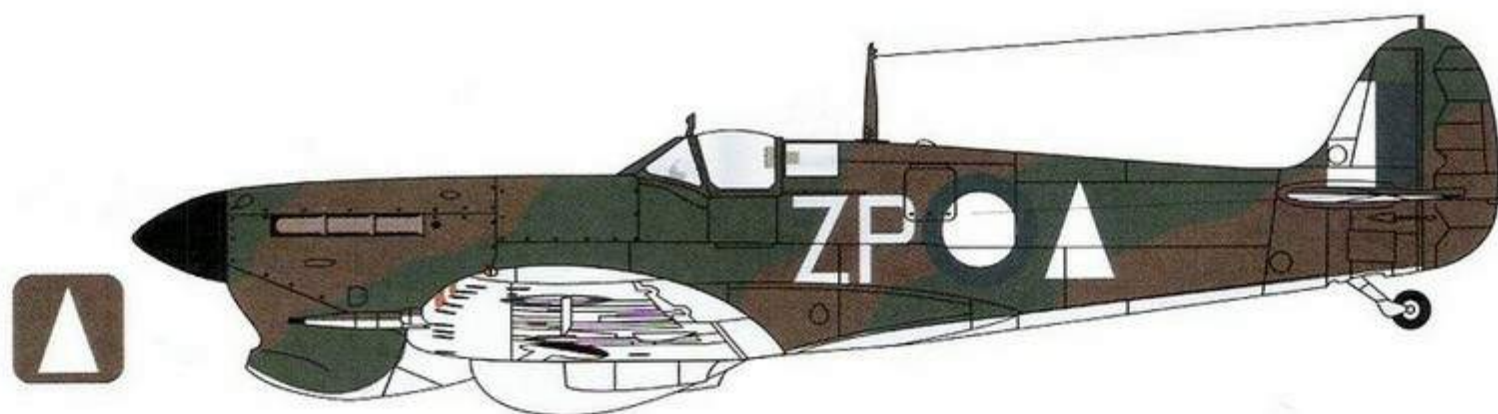
Originally camouflaged in Dark Earth and Middle Stone upper surfaces with Azure Blue undersides, the Middle Stone areas were overpainted in RAAF Foliage Green which appears to have obliterated the serial number. The RAF roundels and fin flashes were altered into the RAAF blue/white style, by overpainting the red and yellow areas.

White wing leading edges were applied, from the wing root to the wing tip. Squadron codes were in RAAF Sky Blue, as was the propeller spinner and rear fuselage band, specified for RAAF Fighters briefly in mid/late 1943. Note the 'Jiminy Cricket' nose art and two 'kill' markings under the windscreen. BS219 had the RAAF serial number A58-84 allocated.



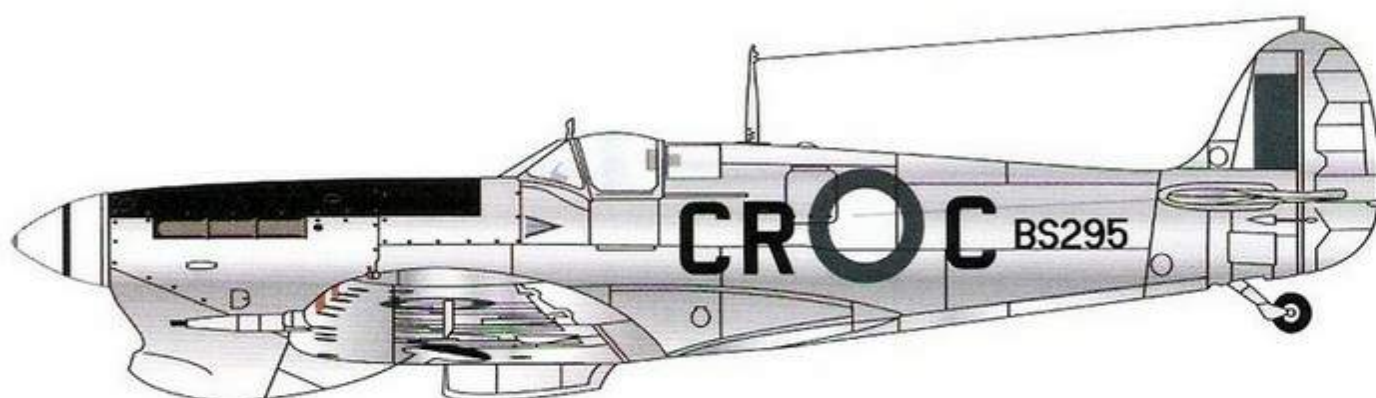
Close-up of the 'Jiminy Cricket' nose art and two 'kill' markings under the windscreen





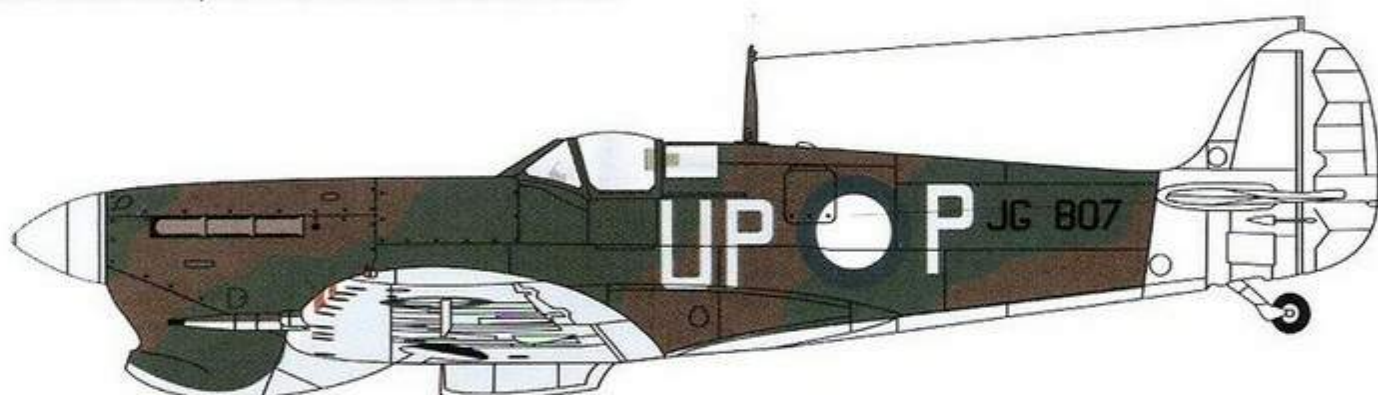
Spitfire Mk Vc, (serial unknown), ZP-Delta of No 457 Sqn, RAAF, Livingstone, mid-1943

Apparently completely repainted in the standard RAAF camouflage scheme of Foliage Green and Earth Brown upper surfaces with Sky Blue undersides, 'Delta' still awaits the application of its RAAF serial number. Note the Sky Blue squadron codes with white 'Delta' (repeated under the nose), and white wing leading edges, extending from the cannon barrels to the wing tip



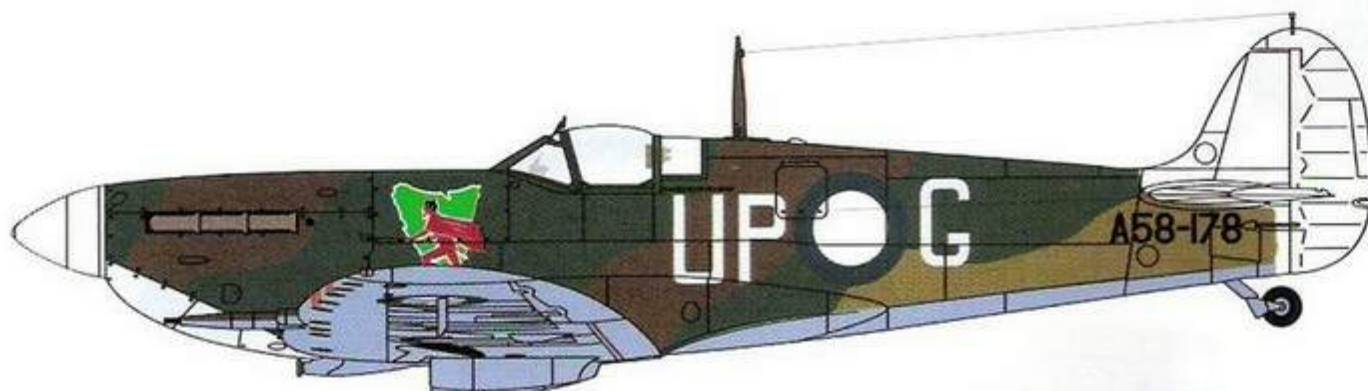
Spitfire Mk Vc, BS295, CR-C flown by Wing Commander Clive Caldwell, RAAF, late 1943

During late-1943 Wg/Cdr Caldwell had one of his Spitfire Mk Vcs, experimentally stripped of all camouflage paint to see if it would improve performance. It has been reported that there was an approximate 10mph increase in top speed but that the 'silver' Spitfire was too conspicuous and it was subsequently recamouflaged. BS295 still bore its original RAF serial. Note Wg/Cdr Caldwell's personal codes and anti-glare panel in black and Wing Commander's pennant under the windscreen. The spinner was white with a single black band



Spitfire Mk Vc, JG807, UP-P of No 79 Sqn, RAAF, Goodenough Island, New Guinea, early 1944

One of the first RAAF squadrons to move 'overseas', No 79, transferred to Goodenough Island off New Guinea in early June 1943. Refinished in the standard RAAF camouflage scheme of Foliage Green and Earth Brown upper surfaces with Sky Blue undersides, JG807 still retains its original RAF serial number. No 79 Sqn was the first RAAF unit to adopt the white tail markings, applied from September 1944. Note the white wing leading edges, extending the full span from root to tip. JG807 had the RAAF serial number A58-176 allocated



Spitfire Mk Vc, A58-178, UP-G of No 79 Sqn, RAAF, Kiriwini Island, New Guinea, early 1944

Repainted in RAAF Foliage Green and RAAF Earth Brown upper surfaces, A58-178 still retains the original Azure Blue under surfaces, with the exception of cowlings underside which is in RAAF Sky Blue, following the removal of the Vokes tropical air intake in an attempt to gain extra speed. The fin, rudder, tailplanes and elevators were overpainted in white. Note the area of original RAF Dark Earth on the rear fuselage, the white spinner and the 'Tasmanian Devil' nose art

● Spitfire Mk Vc, A58-236, QY•G, of No 452 Sqn, flown by Pilot Officer 'Junior' Beaton, Darwin area, mid-1943



Guinea combat area, an additional recognition feature was applied from September 1944. Following the lead of the USAAF 5th Air Force, the entire tail empennage – (ie fin, rudder, tailplanes and elevators) – was overpainted in white, plus the white wing leading edges, invariably now extending the full span from root to tip.

Enter the Mk VIII

The first examples of the substantially better performance Spitfire Mk VIII started to arrive in Australia at the beginning of 1944. Colour schemes on these 'initial batch' aircraft appear to have been a mixture of either 'South East Asia Command' Dark Green and Dark Earth upper surfaces with Medium Sea Grey undersides, or 'Middle East' Dark Earth and Middle Stone upper surfaces with Azure Blue undersides – neither of which were deemed totally suitable for the terrain over which they were to be operated by the RAAF.

Despite the unco-ordinated campaign at stripping off all camouflage paint and operating combat types in their natural metal finish during mid-1944, it was eventually conceded that camouflage still had its uses and most of the LF.VIIIs that had been stripped were repainted in Foliage Green and Earth Brown upper surfaces with Sky Blue undersides, or, in the cases of aircraft that hadn't been stripped, the original RAF Dark Green or RAF Mid Stone, (depending on the original 'SEAC' or 'Middle East' RAF delivery scheme), was overpainted with RAAF Foliage Green, leaving the Dark Earth areas on the upper surfaces, with either Medium Sea Grey or Azure Blue on the undersides.

Another variation on Dark Earth/Dark Green/Medium Sea Grey finished machines, was the overpainting of the original RAF Dark Earth, again with RAAF Foliage Green which gave a very low contrast, 'dark' two-tone green upper surface scheme. Yet another, even 'simpler' scheme, was a single shade Foliage Green only on the upper surfaces, usually with Sky Blue undersides.

The controversial 'light two-tone green' scheme

Many RAAF enthusiasts don't believe that the so called 'light two-tone green' scheme ever existed. Apparently only adopted by No 79 Squadron and applied to several of the unit's machines, the original RAF Dark Earth areas were allegedly overpainted with a locally prepared mixture of six parts cockpit Interior Grey-Green to one part Airframe White, resulting in a very pale grey-green shade.

Sceptics prefer to believe that the aircraft 'allegedly finished' in the 'light two-tone green' scheme were just aircraft in the SEAC Dark Green/Dark Earth upper surface finish, after having been exposed to tropical weather, "for more than five minutes!"

In the mid-1940s, most paints were based on natural pigments, which were a good deal more unstable than the synthetic pigments used today. This factor, combined with the harsh climate prevailing in the New Guinea area, played havoc with paint finishes generally, with some colours being much more susceptible than others. This was particularly so with colours having high levels of red in their composition. Dark

Earth, which had a good deal of red in it, went 'feral' at an early stage of exposure and it is several enthusiasts' belief that this is what happened to the 79 Squadron Spitfires.

The upper surface camouflage was also carried under the nose, including the Aero Vee carburettor air intake and, judging by the way the original RAF roundels have been painted-out, the original RAF Dark Green may well have also been overpainted, probably with Foliage Green on some aircraft.

Under surfaces on these aircraft would probably have been left in the original RAF Medium Sea Grey but might have been repainted in RAAF Sky Blue. White wing leading edges were retained on most of the 80 Wing Spitfires and several No 79 Sqn aircraft also sported white tailplanes, as applied previously to the Mk Vs.

Later delivery Mk VIIIs

The last batch of Spitfires received by the RAAF, 159 Merlin 70-engined HF.VIIIs, (A58-600 to A58-758), began reaching the operational Squadrons during the autumn of 1944. All these HF.VIIIs appear to have been finished in the Dark Green/Ocean Grey/Medium Sea Grey RAF Day Fighter scheme, which they retained in RAAF service, as it was quite suitable for the over-water operations, now being undertaken by 80 Wing.

Coinciding with the delivery of their new 'grey' Mk VIIIs, No 457 Sqn started painting red, white and black 'sharkmouths' on the cowlings sides, initially in a fairly 'narrow-mouthed' design, but later in a quite ferocious 'open-mouthed' version! Full span, white wing leading edges were applied to most of the operational 'last batch' aircraft, in both broad and narrow widths, with either white or red spinners. Occasionally, the original RAF Sky 18 inch wide rear fuselage band was retained, but on the earlier repainted aircraft, a narrower rear fuselage band in white was often applied.

The two RAF fighter units that were sent to Australia in late 1943/early 1944, (to 'cover' Nos 452 and 457 RAAF Squadrons), Nos 548 and 549, like No 85 Squadron's Mk Vcs, briefly sported stripped natural metal finishes, but by early 1945, many of their Mk VIIIs had been repainted in Foliage Green upper surfaces with



● Spitfire LF Mk VIII, A58-464, CR•C, flown by Group Captain Clive R Caldwell, No.80 Wing, Morotai, New Guinea, December 1944



Sky Blue undersides, although one or two were noted still in the original delivery Day Fighter scheme of Dark Green/Ocean Grey/Medium Sea Grey.

By May/June 1945, No 80 Wing aircraft were involved in attacks against Borneo, mainly in support of ground troops, but the sudden end of World War Two in August 1945, was followed by a rapid de-commissioning of the RAAF Spitfire force in favour of the North American P-51D Mustang. In fact, despite over 650 airframes being delivered, the Spitfire was never regarded as being as important to the RAAF, in real terms, as the P-40 Kittyhawk, but nevertheless it did achieve and maintain air superiority in the Darwin region, and helped carry the war back to the Japanese from New Guinea and beyond.

Modelling RAAF Spitfires

I made two Mk Vcs and three Mk VIIIs – (in my preferred 1/48 scale) – to help illustrate some of the variations in the RAAF colour schemes. At the moment, only Airfix produce a Spitfire Mk Vc sub-type in 1/48 scale, in their combined 'Seafire Mk III/Spitfire Mk Vc' boxing, and indeed they also produce a Spitfire Mk Vc in 1/72 scale. As this was meant to be less of a modelling and more of a camouflage and markings feature, for once I will leave the 'how to' of construction of a 1/48 scale Spitfire Mk Vc up to the individual, be it by using the Airfix kit 'as is' or cross-kitting the Airfix 'c' wing with the Tamiya or Hasegawa Mk Vb fuselage, or even using the resin after market 'c' wings from Airwaves or Model Design Construction, mated to the Tamiya or Hasegawa Mk Vb fuselages.

Similarly, a 1/48 scale Spitfire Mk VIII can be produced from a variety of sources, most of the available 1/48 scale Mk IX kits, (ICM, Hasegawa/Revell, Otaki, Ocidental/Italeri), providing optional parts, or even separate boxings, for the Mk VIII, with its shorter span ailerons, Aero Vee carburettor intake and retractable tailwheel. In fact, at the time of writing, Airfix have just announced a brand new tooling Spitfire Mk IX, which should be available by the time you read these words.

RAAF Mk Vcs

My first Mk Vc was finished as BS234, CR•C, flown by (the then) Wg Cdr Clive R 'Killer' Caldwell, Wing Leader, No 1 Fighter Wing, based at Darwin in May/June 1943. Photographs of this particular machine show a fairly low contrast between the upper surface camouflage colours and might possibly have been one of the fairly rare initial examples of a complete 'repaint' immediately after delivery, in RAAF Foliage Green, RAAF Earth Brown and RAAF Sky Blue, but which either retained, or had reapplied, its 8 inch high Night RAF serial number, BS234, instead of the A58-range RAAF serial.

For this I used Humbrol 116 US Dark Green, Humbrol 186 Matt Brown and Humbrol 65 Matt Aircraft Blue, respectively. Whilst perhaps not exact equivalents of the RAAF Foliage Green, Earth Brown and Sky Blue shades, once they had been weathered and had a coat of matt varnish applied, they looked as close as makes no difference. The camouflage appears to have closely followed the

Castle Bromwich factory applied 'A' Scheme pattern, although the demarcation on the nose extends down onto the sides of the large Vokes tropical carburettor filter, which further prompts me to believe in the full repaint theory.

The original RAF roundels appear to have been completely obscured during the airframe repaint, with 'new' 48 inch diameter RAAF Blue/White roundels being applied on the wing upper surfaces, 32 inch diameter Blue/White roundels on the fuselage sides and 36 inch diameter Blue/White roundels under the wings. The fin flash was the standard 24 inch x 24 inch 'square' size – equally divided down the centre.

Caldwell's initials were almost certainly applied in white, approximately 20 inches high and read CR•C both sides – part of the numeral '4' of the serial number being partially obscured by one of the 'C's on the starboard side. The propeller spinner was white with two black bands, and the white wing leading edges ran from the outer cannon stubs to the wingtip navigation lights – similar to the RAF Fighter Command Yellow wing leading edge stripes.

A Wing Commander's rank pennant was applied to the port side under the windscreen, but Caldwell's 'scoreboard' doesn't appear to have been featured on this particular aircraft, at least not in May/June 1943 when the photos I took the details from were supposed to have been taken.

Markings for my kit came from the Ventura 'Prototype and Mk V Spitfires' decal sheet, V4805, (which also features another of Caldwell's Mk Vcs, BS295, in stripped-down natural metal, with black anti-glare panel and black codes – see Jon Freeman's accompanying illustrations). I added a 30 gallon 'slipper' tank to reflect the possible configuration this aircraft might have displayed during the 20 June 1943 raid on Darwin, during which Wg Cdr Caldwell became a 'Pacific Ace', downing his fifth Japanese aircraft, which he added to his 'kills' already obtained in North Africa.

'Junior'

The other Mk Vc I finished as A58-236, QY•G of No 452 Sqn, flown by Pilot Officer 'Junior' Beaton, also based in the Darwin area in mid-1943 at the time of the 20 June raid. Colour scheme





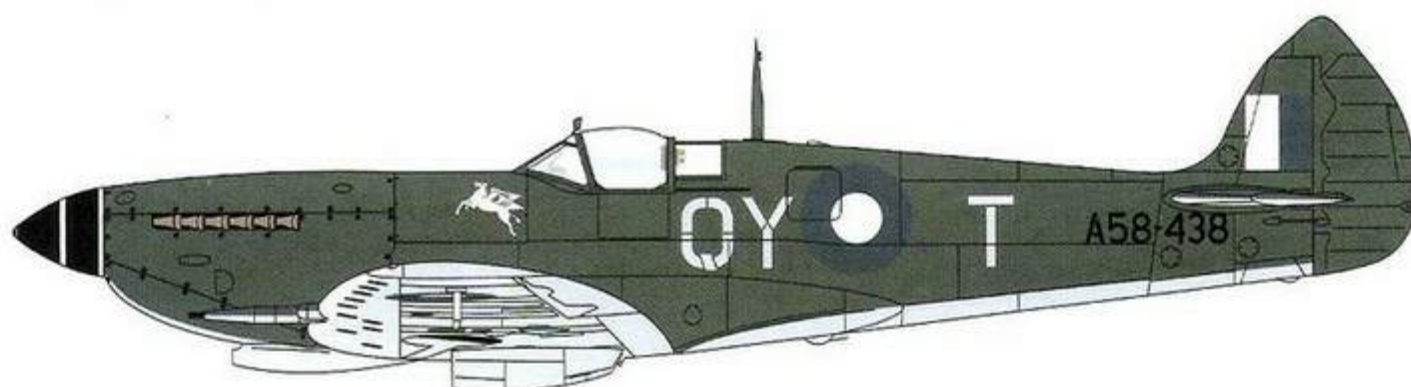
Spitfire Mk Vc, A58-163, SH-L of No 85 Sqn, RAAF, Guildford, late 1943

No 85 Squadron was formed at Guildford, Western Australia in February 1943 and although its Spitfires were originally painted in the Dark Earth/Middle Stone/Azure Blue scheme, the unit stripped off the camouflage and operated them in overall natural metal with Aluminium painted fabric flying surfaces and black anti-glare panels. White wing leading edges were carried, from the wing root to the wing tip. Codes and serial number were black. Note the red spinner and aerial mast



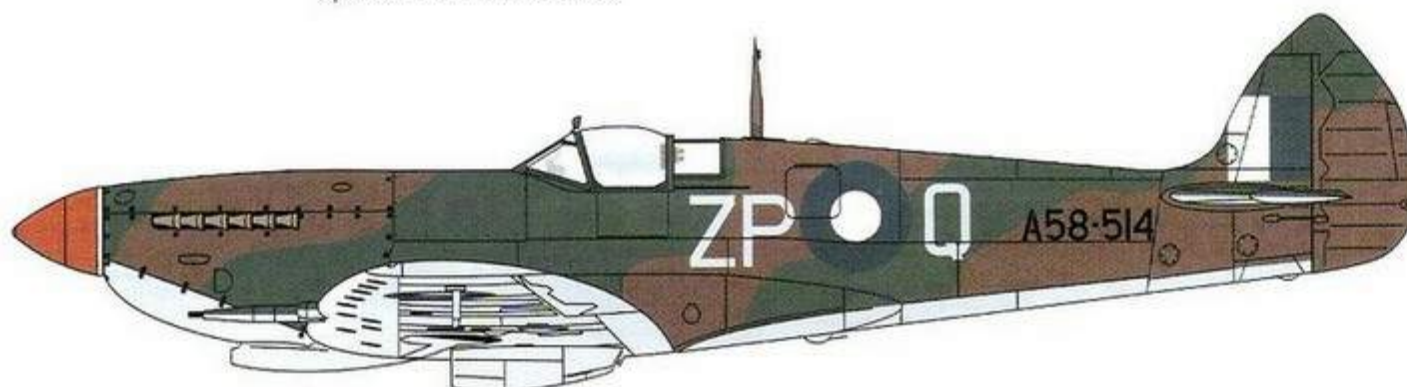
Spitfire Mk Vc, A58-72, SH-N of No 85 Sqn, RAAF, Guildford, late 1944

No 85 Sqn retained its Spitfire Mk Vcs throughout the war, flying patrols over the west of the country, finished in the overall natural metal scheme. The fabric flying surfaces were painted Aluminium and the anti-glare panel was black. White wing leading edges were carried, from the wing root to the wing tip. Codes and serial number were black. Note the white fin, tailplanes and elevators, (a recognition feature strictly speaking only applicable to aircraft operating in the New Guinea area), and red rudder and aerial mast



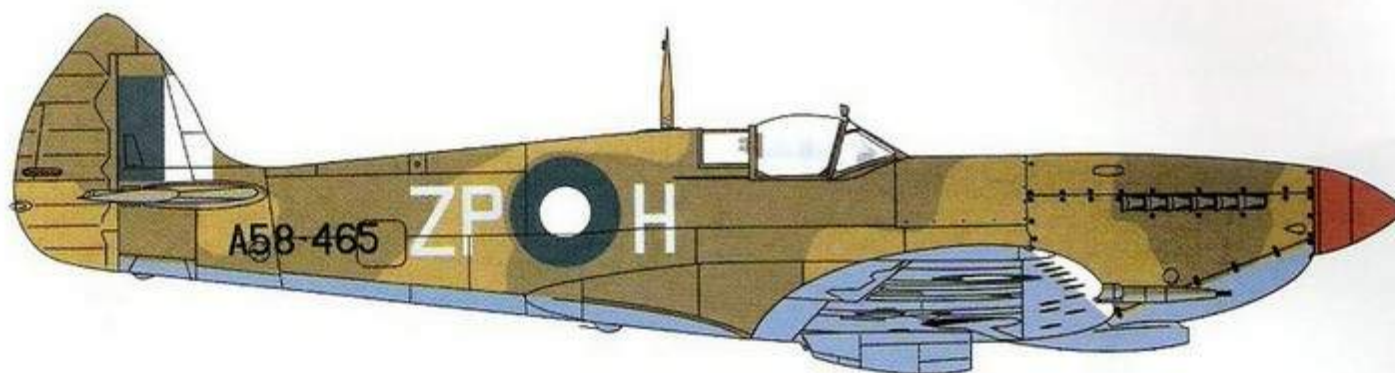
Spitfire LF Mk VIII, A58-438, QY-T of No 452 Sqn, RAAF, Goodenough Island, New Guinea, mid-1944, flown by Flt/Lt Ron Cundy

Following the unco-ordinated campaign at stripping off all camouflage paint and operating combat types in their natural metal finish during mid-1944, it was eventually conceded that camouflage still had its uses and most of the Mk VIIIs that had been stripped were recamouflaged. One of the resultant schemes was RAAF Foliage Green upper surfaces, with Sky Blue undersides as illustrated here on A58-438. White wing leading edges were carried, from the wing root to the wing tip. Codes were Sky Blue and the serial number was black. Note the white 'Pegasus' nose art, black spinner with two white bands



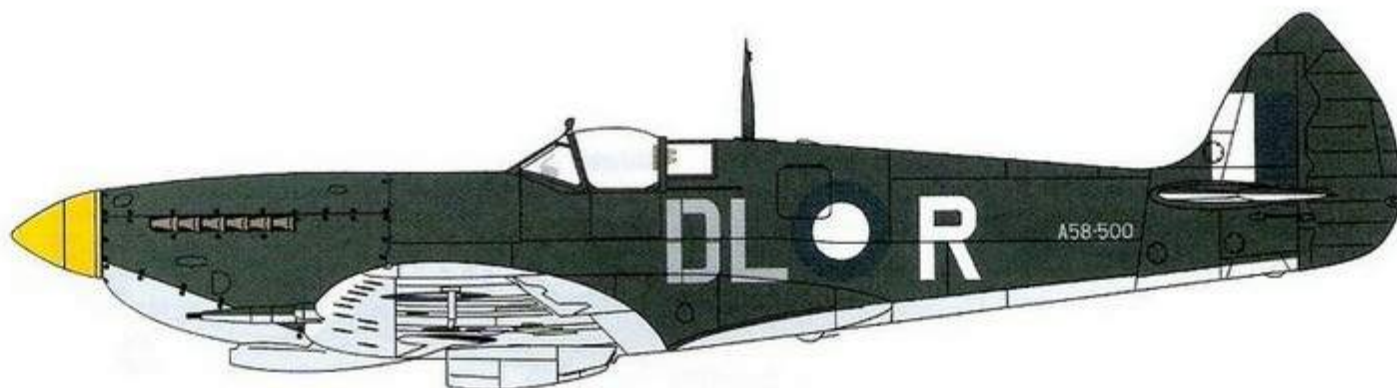
Spitfire LF Mk VIII, A58-514, ZP-Q of No 457 Sqn, RAAF, Goodenough Island, New Guinea, mid-1944, flown by Flt/Lt Alf Glendinning

One of several schemes applied to LF VIIIs during a full repaint, was RAAF Foliage Green and Earth Brown upper surfaces with Sky Blue undersides as illustrated here with A58-514. White wing leading edges were carried, from the wing root to the wing tip. Codes were Sky Blue and the serial number was black. Note the red spinner with white back plate



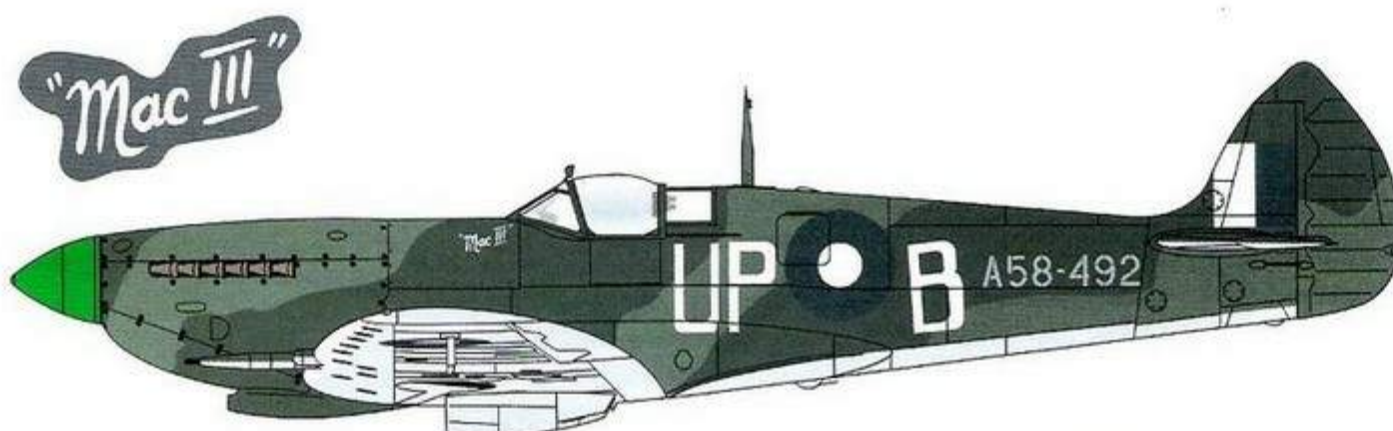
Spitfire LF Mk VIII, A58-465, ZP-H of No 457 Sqn, RAAF, Goodenough Island, New Guinea, mid-1944, flown by Flt/Lt Dick Due

Several LF Mk VIIIs that were delivered in the original RAF 'Desert Scheme' of Dark Earth and Mid Stone upper surfaces, with Azure Blue undersides, were allocated to a combat unit before being repainted, as A58-465 illustrated here. White wing leading edges, from root to tip, were applied. Codes were Sky Blue and the serial number was black. Note the red spinner – possibly delivered as such



Spitfire LF Mk VIII, A58-500, DL-R of No 54 Sqn, RAAF, Darwin, mid-1944

Spitfire LF Mk VIIIs that had been delivered in the 'South East Asia Command' colour scheme of Dark Green and Dark Earth upper surfaces with Medium Sea Grey undersides, often had the Dark Earth areas overpainted in RAAF Foliage Green, creating a very low-contrast 'two-tone dark green' upper surfaces. Either the Medium Sea Grey under surfaces were retained or the undersides were repainted Sky Blue. White wing leading edges, from root to tip, were applied. Squadron codes were either Medium Sea Grey or Sky Blue with a white individual aircraft letter 'R', as per No 54 Sqn practice. The serial number appears to have been reapplied in 4 inch high characters in either Medium Sea Grey or Sky Blue. Note the yellow spinner



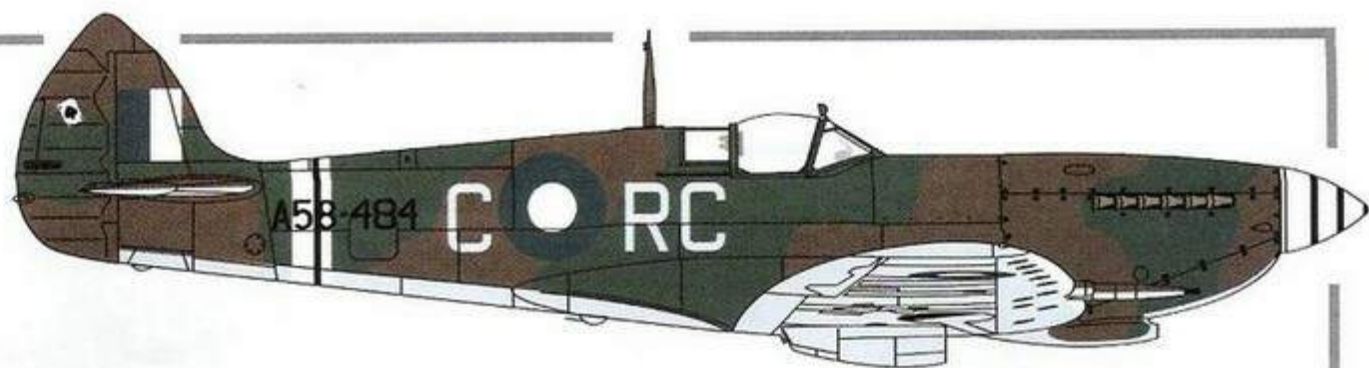
Spitfire LF Mk VIII, A58-492, UP-B of No 79 Sqn, RAAF, Morotai, early 1945, flown by F/O Hugh Kennare

One of the most controversial schemes that may, or may not(!), have been applied to RAAF Spitfires. Rumours still persist that several LF Mk VIIIs of No 79 Sqn were painted in a 'two-tone green' upper surface scheme, comprising either Dark Green or Foliage Green and a lighter 'mixed green'. Some suggest that this was merely a well-weathered Ocean Grey/Dark Green or Dark Earth/Dark Green scheme, but we have illustrated the 'controversial' version here! The codes appear to be white and the area of the rear fuselage immediately in front of the tailplane appears to be in a different shade of green upon which the Medium Sea Grey serial number was applied. The propeller spinner was bright green, identifying B Flight. Note the 'Mac III' name in front of the windscreen



Spitfire LF Mk VIII, A58-543, UP-? of No 79 Sqn, RAAF, Morotai, early 1945

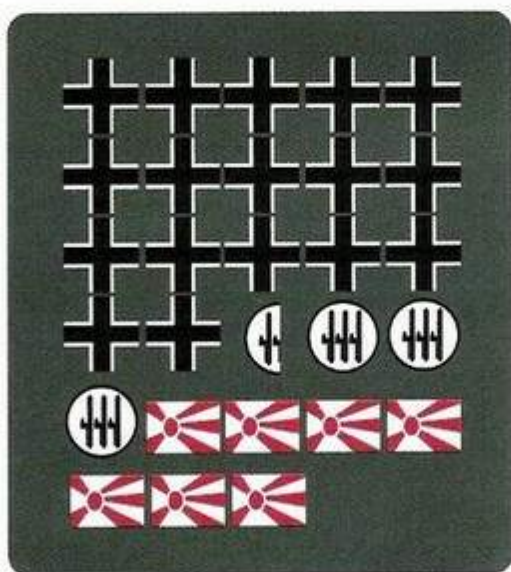
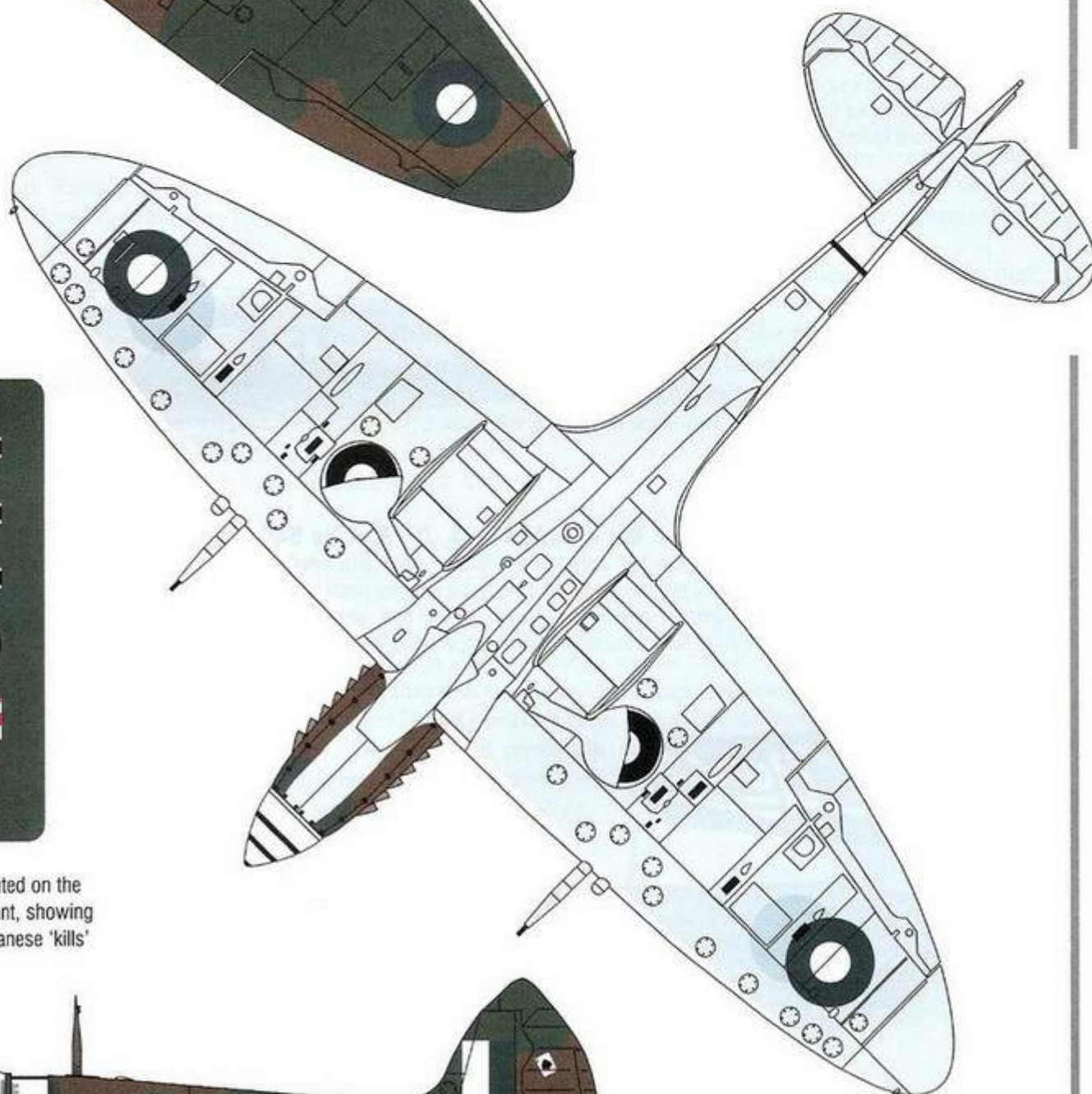
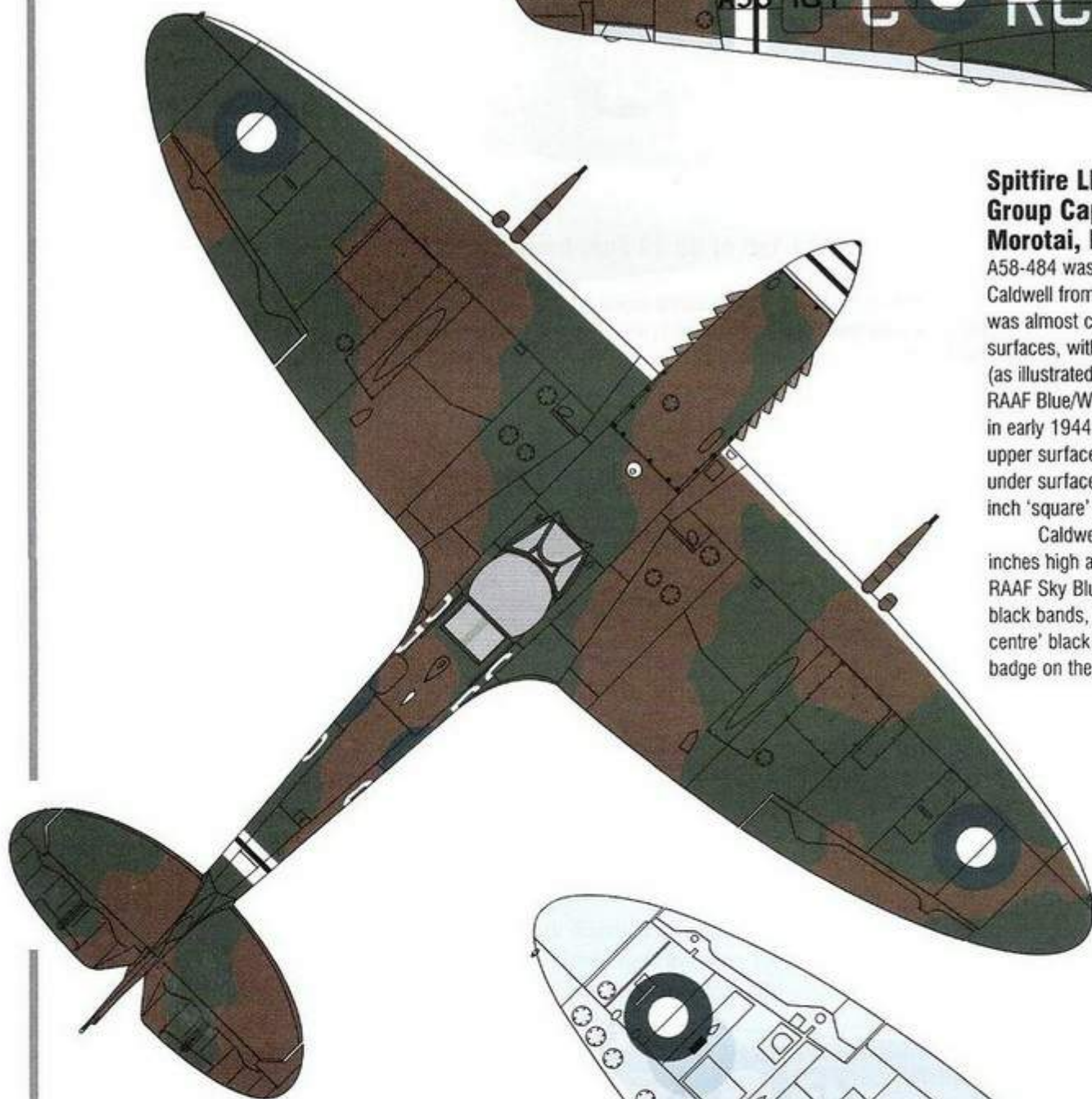
Another candidate for the controversial 'light green' upper surface scheme, apparently adopted by No 79 Sqn for operations over shallow tropical waters. Following a series of accidents and incidents involving several squadron aircraft coded 'H', a '?' was substituted for the unfortunate individual aircraft letter. Again the codes appear to be white and the area of the rear fuselage immediately in front of the tailplane appears to be in a different shade of green upon which the Medium Sea Grey serial number was applied. Note the weathered white tail empennage, revealing part of the original RAF fin flash and the white propeller spinner



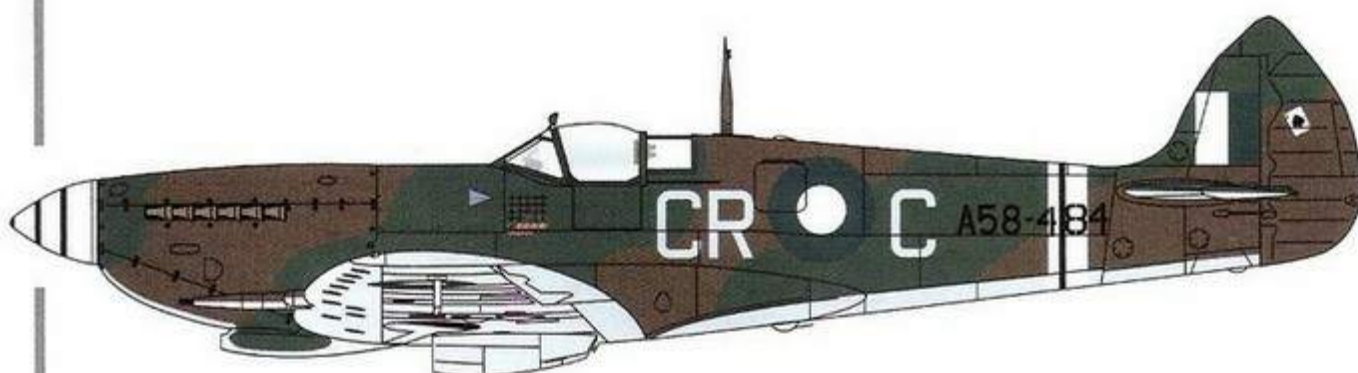
Spitfire LF Mk VIII, A58-484, CR-C, flown by Group Captain Clive R Caldwell, No.80 Wing, Morotai, New Guinea, December 1944

A58-484 was one of several Spitfire LF VIII's flown by Group Captain Caldwell from Morotai in late 1944/early 1945. The colour scheme was almost certainly RAAF Earth Brown and Foliage Green upper surfaces, with either Medium Sea Grey or perhaps RAAF Sky Blue, (as illustrated), undersides. The roundels were the official 'standard' RAAF Blue/White dimensions and diameters, introduced by the RAAF in early 1944, comprising 36 inch diameter roundels on the wing upper surfaces and fuselage sides and 33 inch diameter on the wing under surfaces. The fin flash remained the standard 24 inch x 24 inch 'square' size – equally divided down the centre.

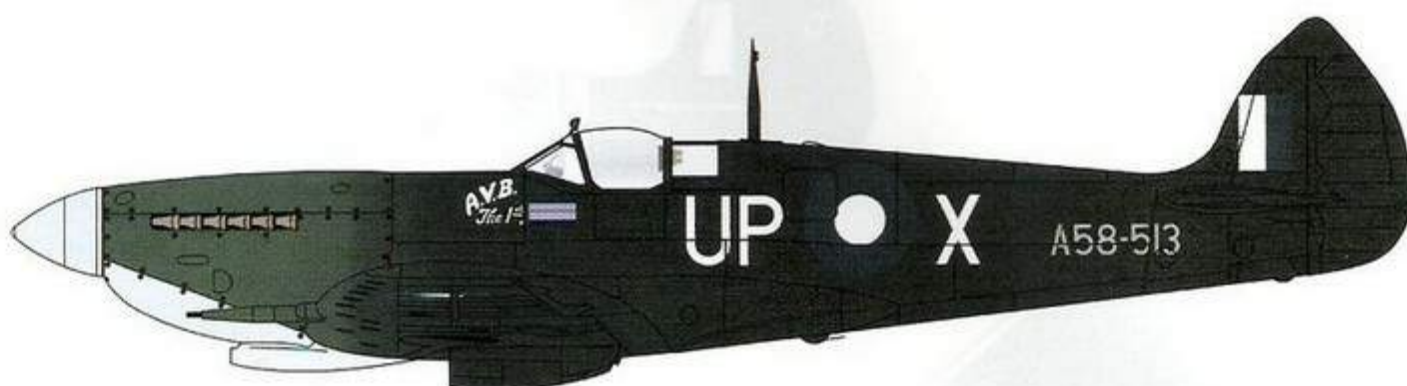
Caldwell's personal codes, 'CRC', were approximately 21 inches high and appear to have been either Medium Sea Grey or RAAF Sky Blue, (as illustrated). Note the white spinner, with two black bands, the narrow white rear fuselage band, with a narrow 'off centre' black band, and the 80 Wing 'Ace of Spades' playing card badge on the rudder.



Inset: Group Captain Clive R Caldwell's 'scoreboard', painted on the port side of the aircraft behind the Group Captain's pennant, showing seventeen German, three and a half Italian and seven Japanese 'kills'

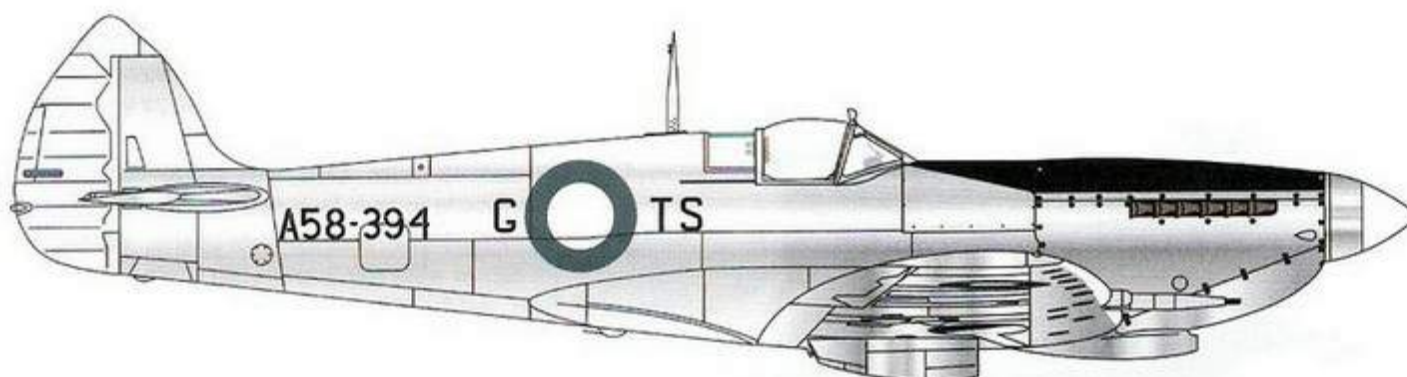


A.V.B.
The 1st



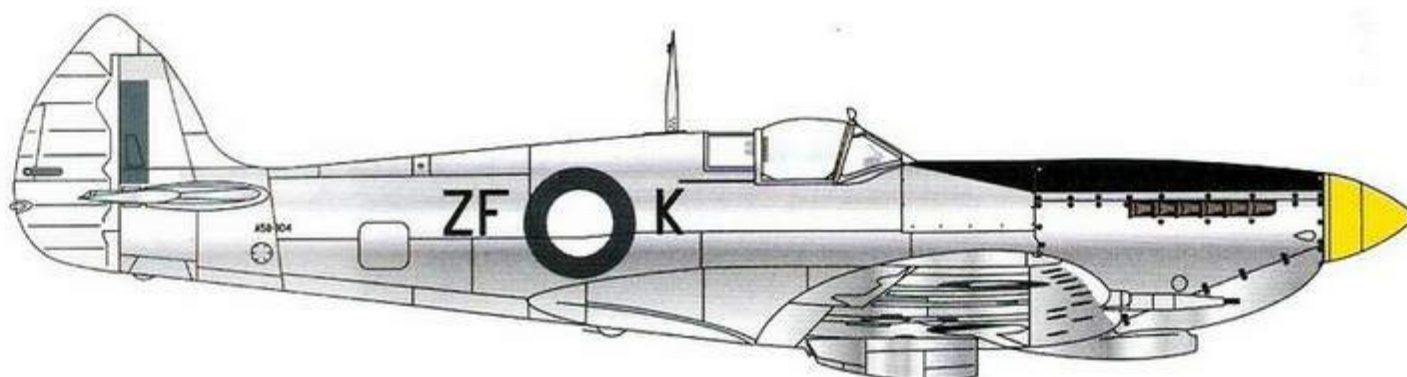
Spitfire LF Mk VIII, A58-513, UP-X 'AVB the 1st' of No 79 Sqn, flown by S/Ldr Ron Susans to Sydney, early 1945

A58-513 was purchased from funds raised during the Australian Victory Bonds appeal of 1944, hence 'AVB the 1st' under the windscreen. It was specially painted in a highly polished very dark gloss green overall. The cowling underside and propeller spinner were RAAF Sky Blue. The codes appear to be white and the serial number Medium Sea Grey. Whether this Spitfire was operated on combat missions in this scheme is not known



Spitfire LF Mk VIII, A58-394, TS-G of No 548 Sqn, RAF, Darwin Civil Airport, early 1945

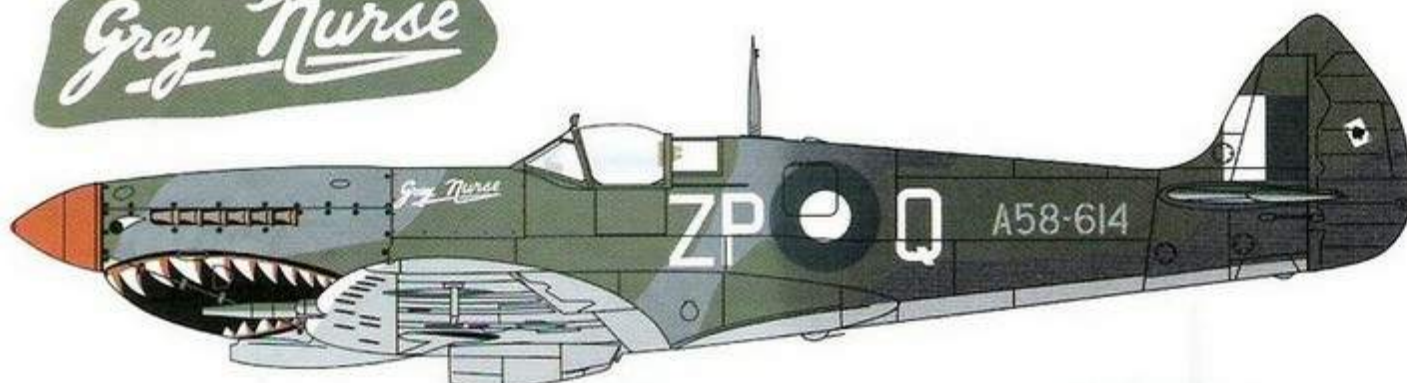
Two new RAF Spitfire squadrons, Nos 548 and 549, were formed at Lawnton, Queensland, in December 1943, as part of Churchill's promise to operate three RAF squadrons in the defence of Darwin. They were to replace the RAAF's Nos 79, 452 and 457 Squadrons, which were allocated to McArthur's advancing forces in the islands north of Australia. After initially operating in the original delivery Day Fighter Dark Green/Ocean Grey/Medium Sea Grey scheme, by mid-1944 many airframes had been stripped down to bare natural metal finishes, such as A58-394, illustrated here as she looked in early 1945. Note the small size of the codes and the white tip to the spinner



Spitfire LF Mk VIII, A58-304, ZF-K of No 549 Sqn Sydney, early 1945

The other new RAF squadron was No 549. Again after initially operating in the original delivery RAF Day Fighter scheme, by mid-1944 many airframes had been stripped down to bare natural metal finish, as A58-304 illustrated here. It was a number of months before either RAF Squadrons were deemed to be combat ready, by which time, when No 549 Sqn moved to Darwin, Japanese opposition in the area had practically ceased. Note the small size of the serial number presentation, the small codes and the yellow spinner

Grey Nurse



Spitfire HF Mk VIII, A58-614, ZP-Q of No 457 Sqn Morotai, early 1945

The last batch of Spitfires received by the RAAF, were HF Mk VIIIs, painted in the RAF Day Fighter scheme of Ocean Grey and Dark Green upper surfaces with Medium Sea Grey undersides. RAF roundels were suitably modified into the RAAF Blue/White style by overpainting. Initially a smaller 'sharkmouth' had been applied to the unit's aircraft, but by May/June 1945 an enormous version was being applied as illustrated here. Note the area on the rear fuselage where the RAF serial had been overpainted in green and the RAAF serial applied in grey, the name 'Grey Nurse' on the cowling, the red spinner and the 'Ace of Spades' badge on the rudder

- Spitfire LF Mk VIII, A58-517, UP•F, of No 79 Sqn, RAAF flown by Flight Lieutenant Norm Smithwell, Morotai, New Guinea, early 1945, in the controversial 'light two-tone green' scheme



this time was the original RAF Dark Earth/Mid Stone/Azure Blue with the Mid Stone areas overpainted in RAAF Foliage Green. The original RAF Azure Blue under surfaces were retained.

Roundels also appear to have retained the original RAF standard dimensions this time, with just the Red and Yellow areas being overpainted in either Blue or White respectively. However, the 56 inch diameter upper wing roundels not only had the Red area overpainted in white but increased in diameter to create a much larger white disc. The original 36 inch diameter roundels on the fuselage sides had the Blue extended onto the Yellow outer ring and the Red centre overpainted in White and increased in diameter, again to create a much larger white disc. The 32 inch diameter underwing roundels were almost certainly modified in the same way with the Red centre overpainted in White and increased in diameter. The fin flash remained in the standard 24 inch x 24 inch 'square' size – again equally divided down the centre.

Paints used this time were Xtracolor X2 Dark Earth, Humbrol 116 US Dark Green and Xtracolor X26 Azure Blue. Note that this time the upper surface colours did not overlap onto the Vokes tropical filter and terminated along the 'usual' cowling panel line.

Similar to Caldwell's BS234, this aircraft was fitted with a de Havilland propeller spinner – this time painted black – with metal propeller blades, but unlike Caldwell's it featured the full RAAF A58 serial presentation, A58-236. Code letters were almost certainly white and approximately 30 inches high.

A small cartoon, a 'baby in nappy and flying helmet' with the word 'Junior' above was painted on the port fuselage just under and slightly in front of the windscreen. This particular machine is featured on the AeroMaster Decal sheet, 'Spitfires Down Under', 48-124C, which thankfully provides all the markings required!

Again I added a 30 gallon 'slipper' tank to reflect the possible configuration this aircraft might have displayed during the 20 June raid on Darwin.

RAAF Mk VIIIs

My first Mk VIII was finished as another of Clive Caldwell's aircraft, a Merlin 66 engined LF VIII he used on Morotai in late 1944, A58-464, and as usual, coded CR•C. Contemporary photographs and current information reveal that Caldwell flew several Mk VIIIs, (at least two of which have been identified as A58-464 and A58-484), which were finished in a 'brown/green' upper surface scheme and not in the Ocean Grey/Dark Green Day Fighter Scheme as previously illustrated.

The actual shades for A58-464 and A58-484 were almost certainly RAAF Earth Brown and Foliage Green upper surfaces, with either the original RAF Azure Blue or Medium Sea Grey, (depending upon the original RAF delivery scheme), or perhaps even RAAF Sky Blue, undersides, both aircraft undoubtedly having being repainted from their original RAF delivery schemes.

An interesting anomaly surrounds the actual identity of

A58-464, as this particular aircraft was *never* allocated to No 80 Wing, it being retained in Australia for pilot training! The probable explanation as to why there were two A58-464s – (contemporary photographs of a CR•C-coded, Spitfire Mk VIII, serialised A58-464, prove that Caldwell flew an aircraft so marked) – is that when the 'bogus' A58-464 was repainted in Foliage Green/Earth Brown, it had the wrong serial reapplied!

All this aside, I still decided to model A58-464, using a mix of Superscale sheet 48-546, (which also features A58-672, ZP•X and A58-178, UP•G), plus roundels from the Tasman 'RAAF WWII Roundels' sheet CS4801. The serial number was made up from Hannant's Xtradecal sheet X023-48.

On this particular aircraft the roundels were the official 'standard' RAAF Blue/White dimensions and diameters, introduced by the RAAF in early 1944, comprising 36 inch diameter roundels on the wing upper surfaces and fuselage sides and 33 inch diameter on the wing under surfaces. The fin flash remained the standard 24 inch x 24 inch 'square' size – equally divided down the centre.

Caldwell's personal codes, CR•C, were approximately 21 inches high and appear to be much darker than the usual white, and could have been either Medium Sea Grey or indeed RAAF Sky Blue. As the ones in the Superscale set were printed in white and I hadn't got any Sky Blue codes in my spares box, I used 30 inch high Medium Sea Grey codes from Modeldecals 1/72 scale Set 53 which scale-out at 21 inches in 1/48th!

Controversial scheme!

I made a further two Spitfire Mk VIIIs – to reflect the differences in late war colour schemes, both of which are featured on the AeroMaster Decals 'Spitfires Down Under' sheet 48-124C.

The first, A58-517, UP•F, of No 79 Sqn was flown by Flt Lt Norman Smithwell, based at Morotai, New Guinea, early 1945. This particular machine was allegedly one of several on No 79 Squadron's charge which was repainted in the controversial light two-tone green scheme of either Dark Green or Foliage Green and the 'mixed green'.

As mentioned previously, much doubt has been cast on whether this scheme actually existed or



- Looking very purposeful with its 'sharkmouth', this Spitfire HF Mk VIII, A58-614, ZP•Q, of No 457 Sqn., RAAF was flown by Flight Lieutenant Alf Glendenning, Morotai, New Guinea, May/June 1945, finished in the late war, Grey Nurse 'shark' scheme



not. In fact the instructions in Ventura's decal sheet V4808, which features A58-492, UP•B, 'Mac III' of No 79 Sqn, suggests that in fact it *didn't* exist, and that all No 79's aircraft were in very faded standard RAF Day Fighter, Dark Green/Ocean Grey/Medium Sea Grey colours.

It really would be a shame if the two well respected researchers consulted by Ventura, (Greg Meggs and Peter Malone), were actually correct, as this two-tone green scheme is certainly 'different'. Venturing where angels fear to tread, I decided to be 'controversial' and painted my model in a mix of 6 parts Xtracolor X10 Aircraft Grey/Green to 1 part white, and Xtracolor Dark Green X1 in the A Scheme pattern. Undersides were painted Medium Sea Grey, Xtracolor X3.

There is an area of the rear fuselage immediately in front of the fin, (which shows up in photos of the real aircraft), that appears to be in a slightly lighter/different shade of green than the dark green adjacent to it, which I painted Xtracolor Nato Green, X18, although in real life this might possibly have been RAAF Light Green.

This aircraft also sported official 'standard' RAAF Blue/White dimension and diameter roundels, which appear to be of 36 inches diameter above the wings and on the fuselage sides and 33 inches diameter under the wings. The roundels on the wing upper surfaces also have a 'halo' of a different shade of green around them, presumably where the original RAF Red/Blue 56 inch diameter roundel had been overpainted.

To represent this on my model, Xtracolor X18 Nato Green, circles were sprayed on to the wing upper surfaces to represent the painted-out original RAF Red/Blue roundels – those on the fuselage sides and underwing needing no 'adjustment' as the Blue/White RAAF roundels were applied directly over and completely covered the RAF 36 inch diameter National marking III and 32 inch diameter National marking II, roundels.

The tailplanes, fin and rudder were painted white, applied directly over the camouflage colours in a very thin coat which 'dulled' the white down somewhat and allowed the camouflage paint underneath to show through faintly, especially on the upper surfaces. The fin flash had also been overpainted in white, but presumably was the standard Blue/White 24 inch x 24 inch 'square' size style underneath.

Sharkmouth

The third Mk VIII I made, was one of the 'last batch' HF Mk VIIIs, A58-614, ZP•Q, of No 457 Sqn, flown by Flt Lt Alf Glendenning, Morotai, New Guinea, May/June 1945. Finished in the standard delivery Fighter Command, Dark Green, Ocean Grey and Medium Sea Grey, for which Hannants' Xtracolor X1, X6 and X3 were used.

This particular machine featured an enormous red/white/black shark's mouth under the nose and the legend 'Grey Nurse' just in front of the cockpit windscreen, a reference to the Grey Nurse shark found in the coastal waters around Australia.

The markings are fully represented on the AeroMaster decal sheet, although the sharkmouth design had to be carefully slit under the centre line to achieve a perfect

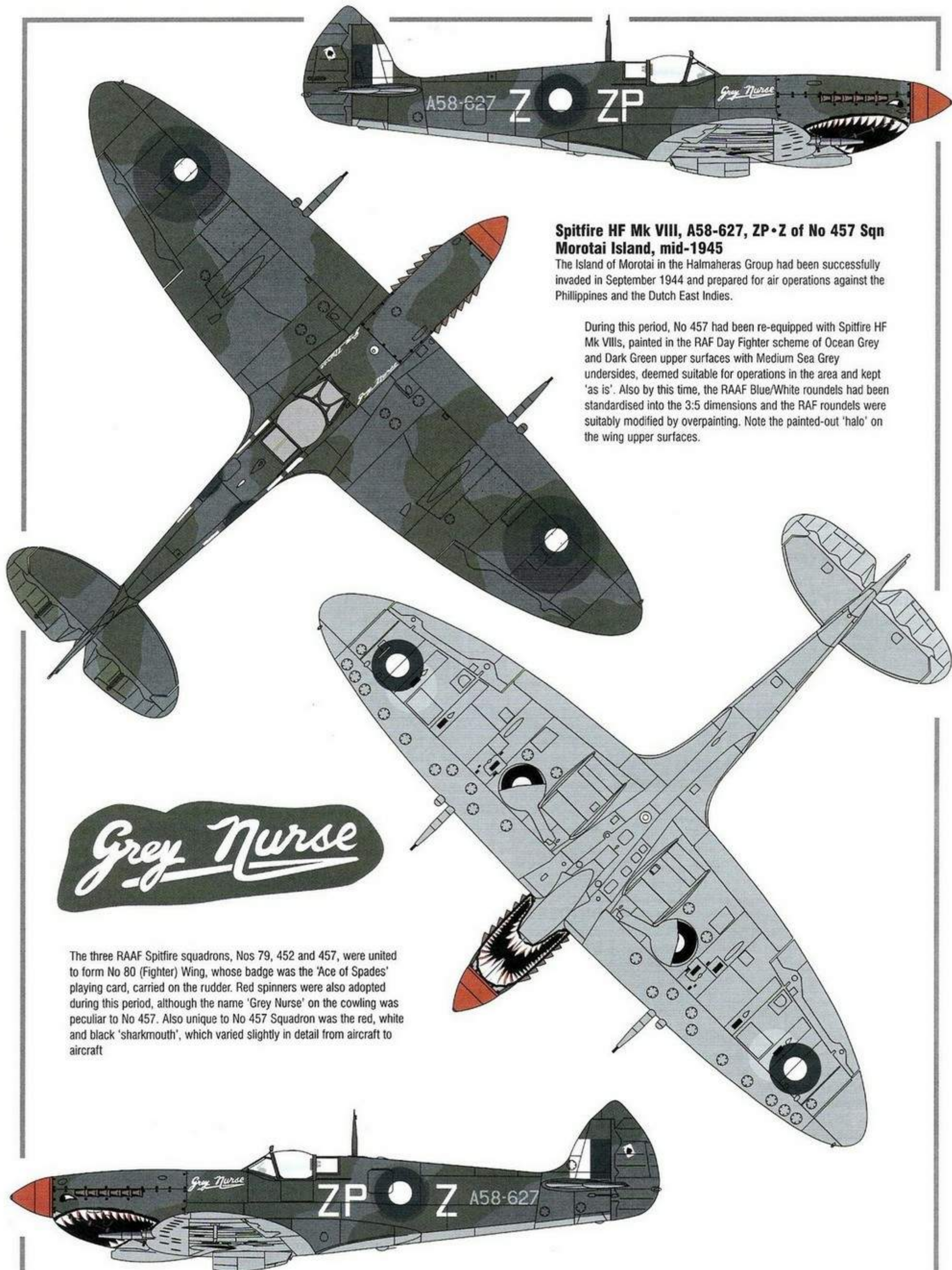
fit. I also found that there weren't enough 36 inch diameter Blue/White fuselage roundels, (item 17), on the sheet to finish both A58-517 and A58-614, and I had to resort to the Tasman 'RAAF WWII roundels sheet' CS4801 for the missing pair. The upperwing roundels were 56 inch diameter RAF National marking Is with the Red centre overpainted in White, with the 32 inch diameter RAF National marking II underwing roundels similarly having the Red centres overpainted in White.

The only 'non-standard' anomaly I could find on A58-614, (and several other Spitfire HF Mk VIIIs in the A58-600 and -700 serial range), was the overpainting of the original RAF serial number in either Dark Green or Foliage Green, creating a 'bar' on which the RAAF A58-range serial was applied in white or pale grey, which caused a slight disruption of the standard pattern demarcation on the rear fuselage. I oversprayed this area in Humbrol 116 US Dark Green, to represent Foliage Green, before applying the decals. **AM**

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- 'RAAF Camouflage and Markings 1939-45' Vol.1, by Geoffrey Pentland, Kookaburra 1980
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- And with special thanks to Ley Reynolds and David Clark APMA, whose help and advice was invaluable.





**Spitfire HF Mk VIII, A58-627, ZP-Z of No 457 Sqn
Morotai Island, mid-1945**

The Island of Morotai in the Halmaheras Group had been successfully invaded in September 1944 and prepared for air operations against the Philippines and the Dutch East Indies.

During this period, No 457 had been re-equipped with Spitfire HF Mk VIIIs, painted in the RAF Day Fighter scheme of Ocean Grey and Dark Green upper surfaces with Medium Sea Grey undersides, deemed suitable for operations in the area and kept 'as is'. Also by this time, the RAAF Blue/White roundels had been standardised into the 3:5 dimensions and the RAF roundels were suitably modified by overpainting. Note the painted-out 'halo' on the wing upper surfaces.

Grey Nurse

The three RAAF Spitfire squadrons, Nos 79, 452 and 457, were united to form No 80 (Fighter) Wing, whose badge was the 'Ace of Spades' playing card, carried on the rudder. Red spinners were also adopted during this period, although the name 'Grey Nurse' on the cowl was peculiar to No 457. Also unique to No 457 Squadron was the red, white and black 'sharkmouth', which varied slightly in detail from aircraft to aircraft



A Lancaster called 'Emily'

In the second of our two-part feature on building the Tamiya 1/48 scale Lancaster, Nick Greenall builds 'Emily', a Lancaster B.I, with some added local interest!

TOM DUGDALE HAS BEEN A NEAR NEIGHBOUR AND family friend for many years. I knew he had served as a Lancaster pilot in No 115 Squadron during 1944, and when I got around to building the 1/48 scale Tamiya kit, (bought some years ago), the obvious choice when deciding upon a colour scheme was to depict one of the aircraft that Tom flew.

Tom's help and patience along the way has made this model one of the most rewarding projects I have completed to date. He provided me with copies of treasured photos, access to his log book and told me in detail what really happened on some of the raids. Despite all this help, only one known photograph of 'Emily', a Lancaster B Mk I, HK551, A4•E, of C Flight, No 115 Sqn, 3 Group, RAF Bomber Command, based at Witchford, Cambridgeshire, circa August 1944, exists, so I had to undertake a lot of research into other Lancasters from the same batch, and aircraft which served with Nos 115 and 195 Squadrons, to gain more information about how HK551 would have appeared.

Flt Lt Tom Dugdale, DFC, completed twenty-four operations with 115 Squadron, (motto '*Despite the Elements*'), and a further six operations with No 195 Sqn, (motto '*Velocitate Fortis*' – Strong by Speed). He was a member of the squadron's 'C' Flight, whose Lancasters carried the codes 'A4', rather than No 115's better-known 'KO' codes. In mid-October 1944, 'C' Flight became the nucleus of No 195 Sqn when it reformed at Witchford as a Lancaster squadron – it had previously been a Typhoon unit. No 195 retained 'A4' as its codes with its 'C' Flight adopting 'JE' as their codes, whilst No 115's new 'C' Flight used the code letters 'IL'.

During his tour, between mid-July and early November 1944, Tom flew eleven different Lancasters on operations. He flew Lancaster B.I,

HK551, A4•E, 'Emily', on thirteen – five day and eight night – raids and believes she handled the best of all of the Lancs he flew. It was common for other crews who flew her on flight tests or raids to be very complimentary about her handling qualities. Although she was not able to fly as high as other Lancs, Tom used this fact to his crew's advantage, keeping her and his crew hidden in the 'Window' stream of higher aircraft, although at risk of damage from falling bombs. He calls this his, "*wise old grouse technique*".

Tom's first two ops were screening or 'Second Dickey' flights with Flying Officer Clarey's and Fg Off Holder's crews, comprising a night raid on the marshalling yards at Aulnoye in ND805 A4•J on 18 July 1944 and another night raid in ME692 A4•G one week later to Stuttgart. The accompanying panel lists Tom's subsequent record of operations in HK551.

Tom completed his tour on 8 November 1944, flying No 195's A4•E, HK686 on a daylight raid on the Rhein-Prussen synthetic oil refinery at Homberg. After some well-deserved leave, he transferred with his navi-



gator, Johnny Tams, to Transport Command, flying Dakotas in South East Asia for the remainder of the war. He remained in the RAF until December 1961 in a varied career that saw him fly Canberras, Valiants, Victors and Vulcans. Tom remains the Honorary President of the Lancashire Aero Club at Barton Aerodrome, still preferring to judge club aerobatics awards from inside the aircraft rather than from the ground.

I was privileged to hear Tom speak of his lifetime in aviation at a fund-raising event last year – truly amazing. It was a poignant moment when Tom saw the completed model of 'Emily' at that event and one morning shortly after, at his home, when we were able to talk further.

To give you an idea of what operations in a 3 Group Lancaster squadron were like during mid/late-1944, I can highly recommend the superb book, *'Luck and a Lancaster'*, by Harry Yates, DFC, which recounts his career with No 75 Sqn at RAF Mepal, Witchford's sister airfield. Checking Tom's log-book against Harry's mission descriptions, it is clear they flew on several raids together, albeit a few hundred feet apart in daylight formations!

HK551 was the sixteenth of a batch of 200 Lancasters built by Vickers Armstrong at Castle Bromwich, between October 1943 and February 1945. Completed in early 1944, like many Lancs in the batch she had the bulged bomb bay doors, which permitted an 8,000lb or 12,000lb High Capacity bomb to be carried. In front of the starboard bomb door was the fairing and chute down which was dropped bundles of Window, (strips of aluminium foil to confuse the enemy's radar). Under the rear turret was the Monica aerial, a radar device which warned of any aircraft approaching from the rear. It was then for the gunners to identify the approaching aircraft as 'friend' or 'foe'... However, it was not always used as German night fighters could easily lock onto its signals.

Delivered to No 75 'New Zealand' Sqn at RAF Mepal near Ely in April 1944, HK551 was allocated to 'C' Flight and coded JN•E. Transferred to No 115 Sqn at neighbouring RAF Witchford on 2 May, she was given the squadron's 'KO' codes and the individual identity letter 'T' – in which guise she completed nine operations. A move to No 115's 'C' Flight on 5 June saw her recoded with their 'A4' codes, becoming 'E' once more and acquiring the name 'Emily'.

After fifty-two operations with No 115 Sqn, HK551 was transferred to 149 'East India' Sqn at RAF Methwold on 7 November, becoming OJ-M, before a move to 'C' Flight saw her recoded as TK•J. HK551 and HK554, (JN•F of 'C' Flt, 75 Sqn), were the only two of the ten Lancasters in the serial range HK551-560, all of which served with Nos 75 or 115 Squadrons, not lost on operations or damaged beyond repair, as in the case of HK557. Having been moved to No 10 Maintenance Unit on 29 June 1945, HK551 was 'reduced to spares' on 11 November 1946.

Modelling 'Emily'

My model of HK551 shows her as she probably appeared in August/September 1944, based on the one photo of her that exists from around that time. Although a distant shot, it is full of atmosphere and useful detail. It shows HK551 just starting her take-off run sometime in July 1944 whilst being flown by Flying Officer Sweeney, Tom's predecessor in 'Emily'. If the photo looks familiar to Lancaster enthusiasts, that is because it appears in the Squadron/Signal book on the Lancaster, (incorrectly attributed to 'A T Douglas'). The photo clearly shows the bulged bomb bay, the overpainted KO•T codes and the Monica aerial below the rear turret.

These features, plus the presentation of 'C' Flight's 'A4' codes, makes the model of HK551 look very different from other model Lancasters. It is a uniqueness I truly appreciate, especially with the link to the original

aircraft through Tom.

Other contemporary photos of No 115's 'C' Flight aircraft have provided clues to the nose markings HK551 may have carried. The photo of Tom and his crew was taken in front of No 195 Squadron's A4•E 'Emily', HK686, in early November 1944 at the end of their tour. On the model I have placed the name 'Emily' in the same position and script as in that picture, which Tom confirms is correct for HK551, although the name was actually chalked onto HK686's nose for the photo. Careful examination of the photo also shows that the signwriter had changed his original script, which had been appreciably longer.

The mission symbols on HK686 were also chalked on for the photo. Their significance is that Tom's crew was the third, (Fg Off Sweeney's was one of the other two), to complete the majority of their tours in 'Emily', hence the three rows of bombs, although why there are twenty-four per row is a mystery to both Tom and myself. If you look carefully you can also see A4•E chalked on the cowl of the starboard outer engine. Whether this was an identification aid for the photographer or something applied during maintenance, we don't know.

HK551's mission markings are more of a 'best guess'. The Tamiya kit's decals were the main constraint here as I did not wish to paint the bomb markings by hand. Considering HK551's history, I judged that by late August she had completed around thirty to forty operations, and I randomly chose thirty-seven as the number. I used the twenty-one from 'Admiral Prune's tally, as they 'drop' vertically, as photos show was the No 115 Squadron style, and made up the numbers one by one with symbols from 'S for Sugar's tally. As to the location, the kit's decals are too large to be placed where photos show the tally to have been on one of 'Emily's contemporaries with 'C' Flight, ND758, A4•A, 'The Bad Penny', so I was really left with no option but to place them in a similar position to the symbols on HK686.

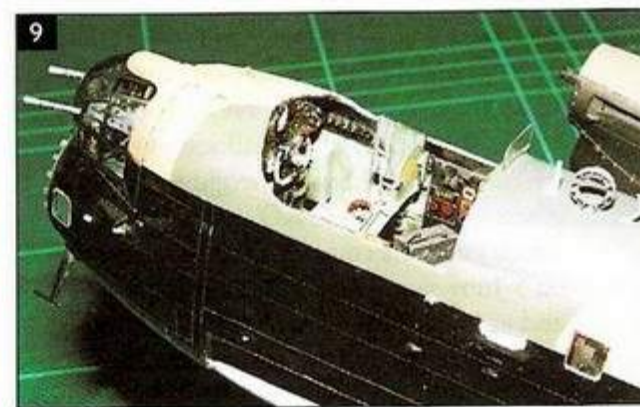
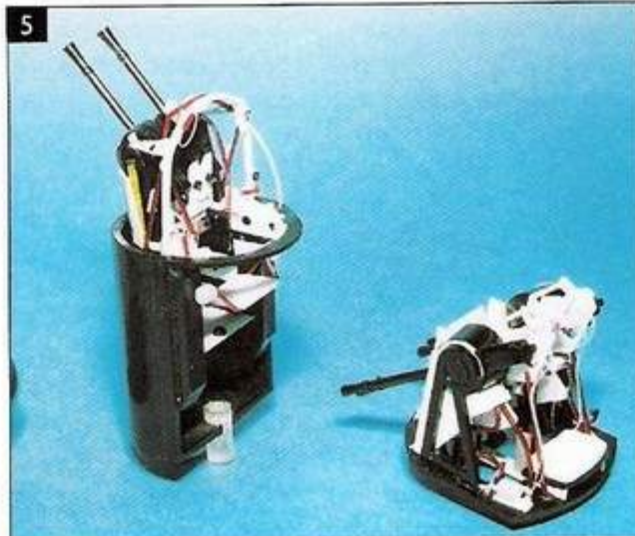
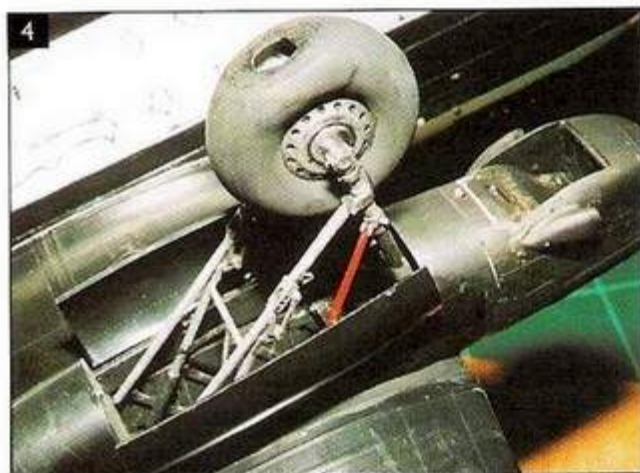
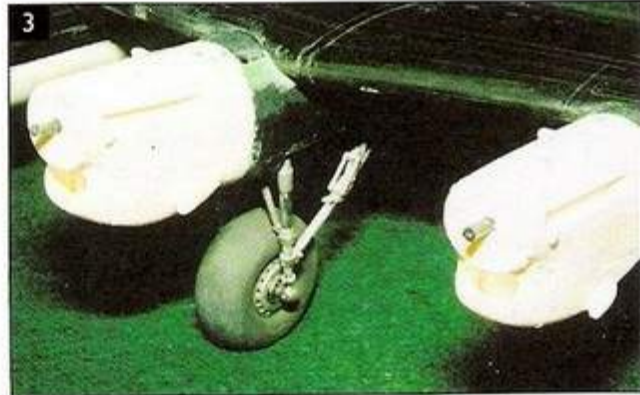
The photos of 'The Bad Penny' show her with the individual aircraft letter 'A' underlined on her port nose. Other photos of No 115 Sqn Lancaster Mk Is and IIIs show them with no identity letter on their starboard nose sides; nor come to that on many of their port nose sides. Despite there being no letter 'E' in the photo of HK686, I opted to put an underlined 'E' on 'Emily's port nose as, with the example of 'The Bad Penny', this may have been a 'C' Flight feature. My reasoning for this is that 115 had a KO•E at this time, HK555. Indeed, 'C' Flight had eighteen individual aircraft code letters which duplicated those of 'A' and 'B' Flights. So, maybe, in 1944, 'C' Flight carried nose letters as a way of its Lancasters being more easily identified as they taxied and lined-up for take off? It's also possible that No 195 Sqn did not use identity letters on the nose of its aircraft. Unfortunately, Tom does not recall if 'Emily' had an individual letter on the nose or not. Hopefully, at least one side of the model is right!

Two more points of interest. Tom flew 'The Bad Penny' on 17 September 1944 to Zaltbommel, a Special Duties mission in support of 'Operation Market Garden', dropping dummy parachutes, one of which remained annoyingly hung-up in the bomb bay. HK686 also had the 8,000lb bomb doors, but had the Nash-Kelvinator paddle-bladed propellers, improving cruising speed by some 8 mph and ceiling by 1,500ft. Delivered to No 195 Sqn in October 1944, she was abandoned in the air when the crew baled out during a raid on Saarbrücken on 13 January 1945.

Having bought and started the kit several years ago... I had got the main interior detail in place, the fuselage, wings and tail together and the bulged bomb bay doors made, before other life events and modelling projects got in the way. The 'finishing touches' required were the nasty jobs – detailing all the turrets (ugh!), then detailing and fitting the engine

Flt Lt Tom Dugdale's record of operations in HK551

Date	Day / Night	Target	Comments	Lancaster losses
28.07.44	N	Stuttgart	Tom's third op – his first op with his own crew. 'A real baptism of fire'	39 / 494
12.08.44	N	Rüsselsheim	Opel Motor Works – V2 rocket motor factory	3 / 191
15.08.44	D	Brusthem	Airfield. Shrapnel removed No.1 fuel tank cap	0 / 109
18.08.44	N	Bremen	Port facilities. 18 ships sunk, 61 badly damaged	1 / 217
25.08.44	N	Rüsselsheim	Opel Motor Works. Diverted to Methwold on return. Collected a/c 26/08	15 / 412
26.08.44	N	Kiel	Docks, U-boats and naval targets. Fg Off Holder in HK566/A4-F lost	17 / 372
06.09.44	D	Le Havre	Assisting Allied advance attacking German positions in the town	0 / 311
08.09.44	D	Le Havre	Assisting Allied advance. HK579/A4-B lost	3 / 304
11.09.44	D	Kamen	Synthetic oil refinery.	1 / 116
12.09.44	N	Frankfurt	Last major RAF raid on this city. Fires raged for 3 days	17 / 378
14.10.44	D	Hütte Ruhrort	Op Hurricane. Shrapnel hit S wing. ND805/A4-J*, HK599/A4-H lost	13 / 569
14.10.44	N	Duisburg	Op Hurricane. Second 1,000 bomber raid on this target on this day	5 / 539
23.10.44	N	Essen	Factories. Last op flight with 115 Sqn and in HK551/A4-E, Emily	5 / 531



nacelles before painting and finishing could commence. An unscheduled 'rest period' between jobs last year gave me the opportunity to finish the model at last.

Most of the flight deck details and turret interiors I made using the traditional plastic-modellers' techniques and materials – heat-stretched sprue, rod, microstrip and plasticard scraps. The deeper, 8,000lb, bomb bay doors were also custom-made – in the closed position. I knew there was no way I was going to depict the model with an open bomb bay – there's way too much detailing to be done in there and I didn't have any references of the fit-out of the 8,000lb bomb bay!

After looking at umpteen photos of Lancs, I opted to depict 'Emily' as if on return from a mission, which enabled me to keep the bomb bay doors closed and the flaps up too, saving myself a lot of additional detailing work there. However, to give the model some character, I decided to 'offset' the rudders and tailwheel slightly to starboard and to 'drop' the elevators. I also opened the two sliding windows in the cockpit and cut out the rear fuselage door, fixing it in the open position.

These notes cover the main aspects of the conversion and the detailing work undertaken on the model and do not necessarily follow the kit's construction sequence.

Fuselage interior

The bomb aimer's, pilot's, flight engineer's and navigator's stations were detailed using plasticard, heat-stretched sprue, rod, microstrip and brass mesh, with reference to the pilot's and flight engineer's notes, various photos and access to the nose of Lancaster DV372 in the Imperial War Museum. How I wish I had had a copy of the excellent CD-ROM 'The Lancaster Explored' at the time... It is very highly recommended! The CD did help with the Mk XIV bombsight, made from scrap plastic rod and strip. The navigator's curtain was a later addition from black tissue paper.

The canopy interior was detailed for lights, latches, curtain rails and open windows. A scratchbuilt DF loop was made from a ring of plastic tube plus microstrip framework, this being painted interior grey-green. The wire loom is a strip of tracing paper very lightly scored with a fine scalpel point, each score line being as close to the previous one as I could manage – the score lines just give a hint of the wires of the full-size DF

loop. The tracing paper was attached to the frame with PVA glue and a dab of superglue for security. The seat harnesses, lap-straps and flight engineer's backrest are from masking tape with fuse wire buckles. The canopy was fixed in place with Humbrol Clearfix.

The bomb-aimer's compartment was also detailed, the main components being a parachute rack from microstrip, handrails up to the flight engineer's position, a fire extinguisher holder – from brass mesh – and the floor cushions from plasticard and filler. The bombsight mounting was constructed from scrap rod and microstrip, as was the forward i/d light, from clear sprue.

An old Paragon '100 Group Lancaster' set provided the larger bomb aimer's blister I needed. This is easily detailed with fine rod for the glycol spray tubes, both inside and out. The blister's mounting points are a little harder to replicate from scratch. I worked out the internal circumference of the blister with a piece of microstrip, using superglue to add to it the sixteen small squares of acetate needed for the mounting points themselves, each having had four spots of gunmetal paint dotted on them with a 0000 brush to depict the mounting bolts! This was then carefully fixed into the nose aperture prior to the blister being attached with Humbrol Clearfix.

I made one BIG mistake, originally painting the bomb aimer's compartment Interior Green, rather than the matt black it should be. Why I did this with all the photos I had... I'm sorry, I haven't a clue! Anyway, it does help to reveal the detail in there in the build photos. The error has now been rectified, with the result that most of the detail is now invisible in its black hole!

The rear entry door and rear interior detail, including the flare chute, first aid box, ammunition runs, walkways, entry step, fuselage framework and Elsan, were made from plasticard, microstrip and rod. The access ladder was also scratchbuilt from rod. The Interior Green, (Humbrol 78 Matt Cockpit Green), was heavily weathered for paint chips on the walkways and entry step.

For all internal detailing for your model and the internal colours, the best reference I can point you to has to be the CD mentioned above; nothing else comes close! The SAM Publications 'Modellers DataFile No 4', is another excellent source, together with contemporary interior photos to be found in other references.



Fuselage exterior

The window chute and fairing under the starboard side of the nose was made from 10 thou plastic card, carefully cut out and shaped for the vents. A picture of HK535 shows her with the original style pitot, so this was fitted to the model rather than the later style in the photo of HK686.

The bomb doors were made using 30 thou plastic card side and profile formers, cut 40 thou undersize, then fitted to a 30 thou base of the same shape as the bomb bay roof aperture. These were planked using two layers of 20 thou plastic card strips. I was struggling with the cross section of the bomb bay until I came across drawings of a Lancaster Mk II and an almost head-on photo of a B.I, PP687, with the bulged bomb doors by Charles E Brown in *'Camera Above the Clouds - Vol.1'*, both of which helped me with the cross section. Other photos of Lancaster Mk Is and IIs helped me with the contours and fairing at the rear of the bomb bay, the fairing being made in the same way as the main doors, using plan and cross section formers and 20 thou plastic card planking.

The ventral turret hole on many HK-batch Lancasters appears to have been simply faired over with a flat blanking plate, placed in such a way that the circular cut-out is still apparent in side views as a break in the profile outline. Many Lancaster Mk Is with the bulged bomb bay doors retained the ventral turret's airstream deflector at the rear of the fuselage-mounted fairing aft of the doors; the photo of HK551 shows her to have been fitted with one of them. A disc of 20 thou plastic card covered the turret hole, which I had cut out, and 10 thou plastic card was used for the deflector – trial and error being used to get the correct shape of this with reference to several photos. Note: Lancaster Mk I, 8,000lb bomb bay doors, were different at the front to those of Lancaster Mk IIs, the latter having a distinct step in their side profile.

The passage of time from my starting the project to finishing it, had seen some distortion and cracking take place to the bomb doors, so they were covered with Milliput, sanded to shape yet again and the surface detail engraved on them, using the kit doors as a guide for the panel and rivet lines.

Holes were drilled for the under fuselage identification lights and bulbs were made for these, and the rear formation lights, from clear sprue. The identification lights were then glazed with Clearfix and coloured using Humbrol Clear paints. A call to those helpful chaps at the Battle of Britain Memorial Flight, (one of whom went out to look at PA474), confirmed the colours of these lights, which are, front-to-back: amber, green and red. The kit's Lorenz dipole blind approach aerial was replaced with a new one made from plastic card and rod. The fairing for the flare chute opening fairing was again made from 10 thou plastic card. The Monica aerial was formed from shaped rod and two 5 amp fuse wire 'U's superglued in place.

Wings and tail surfaces

Tamiya used the RAF Museum's R5868 PO-S as their full-size reference, so the main change on the wings and tails is to replace that Lanc's late/post-war metal covered ailerons and elevators with the earlier fabric covered ones.

The metal surface details were shaved and sanded off before rib detail was added from microstrip, using the MAP scale drawings for their positioning. These were sanded off at their leading and trailing edges to blend them into these areas. Aileron, elevator and rudder trim tab detail – mass



balances, all control horns and links – are from 'card and rod. Tamiya's surface detailing and raised panels on all the flying surfaces may be overscale, but I was not prepared to correct it. The wing tip navigation and formation lights had bulb detail drilled out prior to fitting. HK551 had the original glazed formation light units, not the later three separate bulbs.

Engine nacelles

The four main nacelle assemblies had been fitted during the original build but I had managed to lose the original kit engine cover panels. So, I was forced to use the superb Belcher Bits resin nacelles, exhausts and exhaust shrouds to replace the lost kit parts – *how tragic!* I highly recommend these resin nacelles for any 1/48 scale Merlin-engined Lancaster. However, when fitting them their alignment needed checking from ALL angles. I used 90-second Araldite to fix them in place rather than superglue and put a pencil line along the resins' upper surface centrelines together with thin strips of masking tape over the wings, to assist in their alignment.

The carburettor intake ice guards were made from acetate, etched with a sharp scalpel to depict the mesh, this being highlighted with a black wash before it was cut into eight ovals. These had microstrip frames and attachment struts attached to them with superglue. Unlike HK686, HK551 had the pointed de Havilland constant speed propellers, so I cut and sanded down the kit's paddle bladers to the required shape – how exciting...



Undercarriage

Photos of other Lancasters from the same batch show them with untreaded main wheel tyres, so I filled the tread patterns and flattened the tyres before adding 'side bulges' from filler. Undercarriage door closure links and brake cables were added from rod and heat stretched sprue, with the main u/c legs having hinge detail and access steps added from 10 thou plastic card. I separated the tailwheel from its yoke and detailed the hub before rejoining the two parts and fixing them in place.

Turrets

I had managed to get photocopies of old Air Publications Lancaster manuals with the information I needed to produce the level of turret

detail I wanted to add at the time of the original build, then promptly reached a full stop there! In the rear turret, the kit gun mounting side frames are incorrect. The photos of the turrets under construction show how to correct the kit parts. I was careful to keep the guns' pivot point where it needs to be or else the glazing will not fit without some serious modification. The rear turret glazing had the clear vision panel carefully razor-sawn out, matt varnish being used to depict the perspex strips for the sliding clear view panel.

In addition to detailing the basic kit parts, plastic card, heat stretched sprue, plastic rod and microstrip were used to make the gun mountings and sighting frameworks, cabling and seats, in all the turrets. Not having come across better .303 Browning machine gun barrels, I stuck with the kit parts, hollowing out their ends and 'beefing-up' the cooling vanes using strips of masking tape. The gun barrels were painted Humbrol 53 Metallic Gunmetal with 33 Matt Black being used for the cooling slots on the barrel sleeves. Masking tape was again used for the gunners' lap harnesses. As before, the glazings were attached using Humbrol Clearfix.

Painting and decals, highlighting and weathering

I used Humbrol enamels throughout, 29 Matt Dark Earth, 163 Satin Dark Green and 33 Matt Black being toned down with white, thinned 10% and applied with quality 1/4 inch flat artists' brushes for the main camouflage colours.

As I've said before in previous articles, I always aim to keep all panel highlighting and weathering subtle – if I can only just see the former from about a foot away – then good! I used very sharp H and 2B pencils to highlight just the panels that can easily be seen in photos and a very dark grey wash was applied along the control surface joints on the upper surfaces.

I used photos of No 115 Sqn and other HK-batch Lancs as references for weathering and tonal effects. These included highlighting some of the fuselage joint lines – also referring here to Charles E Brown's colour photo of Lancaster PP687 on a test flight from Castle Bromwich in 'Camera Above the Clouds' – and dry-brushing further toned-down shades of the base colours to emphasise the rib detail on the ailerons and elevators. The leading edges of all the flying surfaces also received some blurring of the demarcation lines and paint chipping; the latter also being applied to panels in the black areas of the airframe. Reference to photos is essential so as not to overdo the end results; the last thing you want is a Lanc that looks to be made of house-bricks as every rivet or joint line is weathered!

The exhaust stain weathering on a Lancaster is one of the keys to capturing the character of the real aircraft. I looked at umpteen photos to find ones to get the degree of weathering right for a Lanc that has flown thirty-seven missions and umpteen flight tests. The exhaust staining is a mix of Humbrol 28 Matt Camouflage Grey, 33 Matt Black, 93 Matt Desert Yellow and 113 Matt Rust. Note that on the outboard engines, the outboard exhausts stain the *under surfaces* of the wings and not their *upper surfaces* and, from photos, how the staining wraps around the inner and outer nacelles in different ways.

Dry-brushing and thin washes of 28 Matt Camouflage Grey also picked out areas on the black surfaces, eg the bomb doors, that photos reveal weathered more than other bits of the airframe. The tyres, wheel hubs and areas where they would throw-up dust and gunge received a wash of 'Witchford-dirt'!

Johnson's Klear was applied before decalling. All the National markings came from Xtradecal sheets X028-48 and X030-48. A4•E, HK551, the nose 'E' and the mission symbols came from cut-up kit decals. The code letters and serials were overpainted with Humbrol 100 Matt Red Brown as the red in the kit decal is too 'red'. I've also seen one example of yellow in a more recent Tamiya Lancaster decal sheet that is more orange than yellow. The name 'Emily' was painted freehand on some scrap kit decal film. Luckily I got it right first time! The kit stencils were used 'as is', although they are too red. Their size prohibited overpainting with Humbrol Matt Red Brown, however.

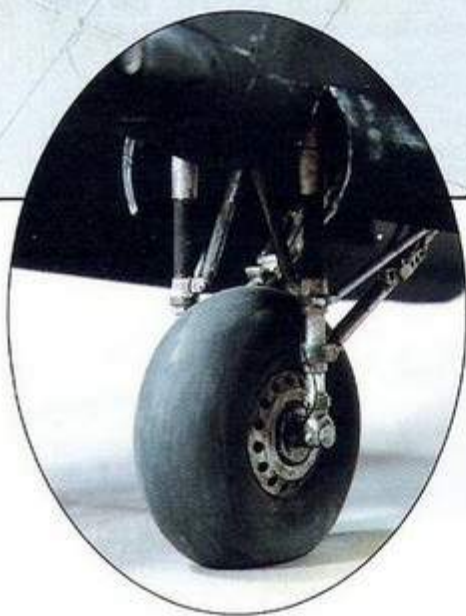
The canopy-to-fin aerals are from Aeroclub's lycra thread, painted with thinned Humbrol 53 Metallic Gunmetal. Blobs of thick matt black represent the insulators. The positioning of these varies, those on the port

side being near the canopy and fin mounting points plus one about 4 (scale) feet ahead of the one by the fin, whereas on the starboard side there is one 1/3rd of the way back from the canopy to the tail. The two fuselage whip aerals are from 5-amp fuse wire, matt varnished.

The whole airframe was given a coat of Humbrol Matt Cote, to seal everything in and restore the matt finish before the final weathering was applied. This consisted of 'newer' paint chips using Humbrol Metalcote 27001 Dull Aluminium, eg on some of the engine panels, the flying surface leading edges, across the tops of the wings in the walkway areas and over the fuselage upper surfaces between the wings and the mid-upper and rear turrets.



The base was a quickly made affair, using grey art paper and scenic grass paper, with reference to No 115 Sqn Lancasters at dispersal in 'Lancaster at War' (Vol 1), and the Airfield Focus book. Photos provided a guide to the joins in the concrete, simply drawn in 'hard' with a 2H then 4B pencil before cracks were added with a HB pencil and various paint effects – dry brushing, washes, splattering – used for the mud, dust and oil stains. Areas of the grass effect paper were scrubbed with a pencil eraser and then painted with different colours of earth to depict worn areas and muddy patches.





I had no idea where the original 'Emily' had been parked at Witchford. I had seen that the shape of Witchford's dispersals was similar to those at Binbrook, so had based the location of the model on the base as a mirror-image of the No 460 Sqn Lancaster pictured at Binbrook on page 39 of 'Lancaster at War' (Vol 1), a mirror image as I had the rudders and tail-wheel deflected to starboard.

After I had made the base, Tom showed me on the map of Witchford in the Airfield Focus book where 'Emily' used to be parked. Whether by luck, or some higher force, I had got her location just right!

So now she sits proudly looking at me from the top of our bookcase as I finish this article on my laptop, one very unique and special Lancaster.

Dedication

This article is dedicated to all the crews and personnel who served in Nos 115 and 195 Squadrons during World War Two, in particular to Tom Dugdale and his crew, Bill Ray: Bomb Aimer, Ken Whitney: Flight Engineer, Johnny Tams: Navigator, Dick Dawson: Wireless Operator, Mick Cockle: Mid-upper Gunner and Jimmy Byrne: Rear Gunner.

I would also like to dedicate this article to another ex-115 Sqn member, Bill Margerison. Bill was an Air Gunner on Wellingtons until forced to bale out of Wellington Mk III, X3560, KO•K over Holland near Nijnsel on 13/14 July 1942 after a raid on Duisburg. The full story of this event is told in the chapter 'One of our aircraft is missing' in Martin Bowman's book 'Wellington The Geodetic Giant' published by Airlife. Bill and all his crew became PoWs. Bill endured the forced march of over 500 miles from Stalag VIIIb at Lamsdorf near the Polish border to Ziegenhain on the Dutch border, between 22 January and 12 March 1945, during which time he lost over 3 stones in weight. Tom and Bill served for a total of 67 years as Church Wardens at St Wilfrid's, Ribchester, many of those years side by side. For obvious reasons I do hope that Trumpeter finally release their 1/48 scale Wimpey, soon! 



Acknowledgements and References

I must once again thank Tom Dugdale for all his kindness and help with first hand information about his experiences and time with HK551. I must also thank Mary Jane Millare at the RAF Museum's Department of Research & Information Services for copies of the AM Form 78s, the aircraft movement records, for HK551 and HK686, and the staff at the BBMF who so kindly helped me with colours of the under fuselage identity lights.

- 'Lancaster at War' – Vols 1 to 4 by Mike Garbett & Brian Goulding, Ian Allan Publishing
- 'Lancaster – The Definitive Record' (3rd edition) by Harry Holmes, Airlife
- 'Luck and a Lancaster' by Harry Yates, Airlife
- 'The Lancaster Story' by Peter Jacobs, Silverdale Books
- 'The Avro Lancaster' (Aeroguide Classics No 3), Linewrights
- 'Camera Above the Clouds' – Vol 1 by Anthony Harold, Airlife
- 'Lancaster Units 1942-1943' and '1944-1945' by Jon Lake, Osprey Combat Aircraft 31 & 35
- International Air Power Review Vol 12 'Avro Lancaster' by Jon Lake, Airtime Publishing Ltd
- Pilot's & Flight Engineer's Notes for Lancaster B.I, B.III and B.X, Crecy Publishing Ltd
- 'Modellers' Datafile 4 – The Avro Lancaster, Manchester & Lincoln' by Richard A Franks, SAM Publications
- 'Lancaster in action' by R S G Mackay, Squadron/Signal
- 'Airfield Focus No 47 – Mepal and Witchford' by Martyn Chorlton GMS Publications
- 'The RAF of WW2 in Colour' by Roger A Freeman, Arms & Armour
- Aeroplane Monthly, Feb 1987 'What did happen to Glenn Miller?' article by Roy Nesbit, includes a photo of HK975
- '2nd TAF Spitfire – The Story of Spitfire ML407' by Hugh Smallwood, British Aviation Heritage, includes a photo of HK535
- Avro Lancaster B.I and B.III scale drawings by D H Cooksey, Model & Allied Publications
- 'The Lancaster Explored' CD-ROM, Flying Zones Publications



Making bomb rings

Randy Lutz describes how to paint the rings on conical shaped objects such as spinners or the noses of bombs

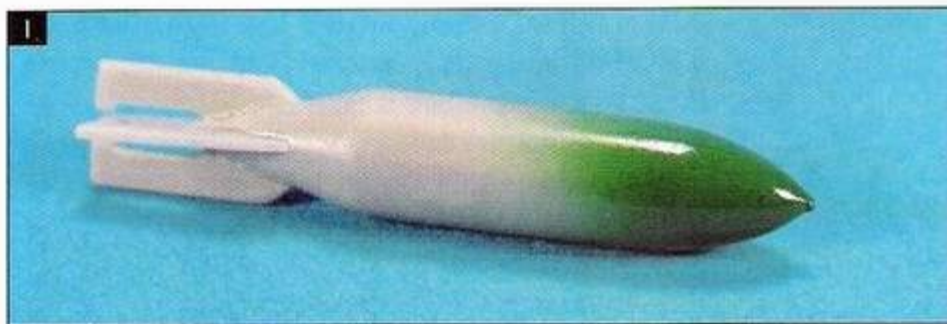
■ ONE OF THE MOST FREQUENTLY ASKED MODELLING questions is, "What is the best way to paint rings on conical shaped objects such as spinners or the noses of bombs?"

I have seen various suggestions offered, ranging from inserting the bomb in a drill chuck and whilst spinning it at a slow speed, 'touch' a paint brush to the bomb to apply the rings, through to using a small elastic band to mask off the area of the stripe, which fall under the plausible, to a couple of rather more implausible examples such as dipping the nose of the bomb into a jar of paint for the first colour, dipping again for the second colour and finally dipping a third time to repeat the first colour.

Or how about placing your bomb in a lathe and while spinning, apply

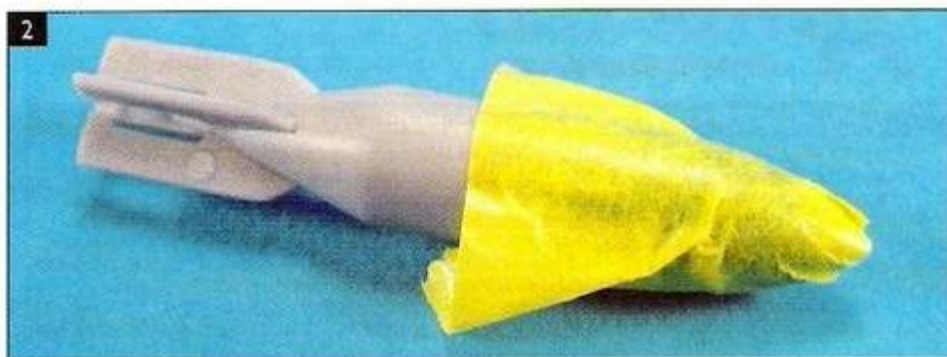
the stripes. Let me think... how many people do I know with an expensive lathe? Even if it were to work, it would not prove practical if you wanted to paint the rings on the nose of an Me 163 Komet or He 162 Volksjäger. Imagine trying to insert an entire model in the lathe's chuck! So, to this end, I offer my solution to this age-old question.

All that is required are a few basic tools and some rudimentary maths skills. The tools needed should be in any modeller's toolbox and consist of some good quality masking tape such as Tamiya or 3M, (I prefer 3M, but I have shown Tamiya in the photos as it photographs better); a circle template – plastic or steel, it does matter; and an OLFA circle cutter, or any comparable brand.



► Step 1

The first step is to paint the area of the bomb where you will want the stripe to appear. In photo 1, I have applied green to the tip of a bomb from the Fine Molds 'Judy'.



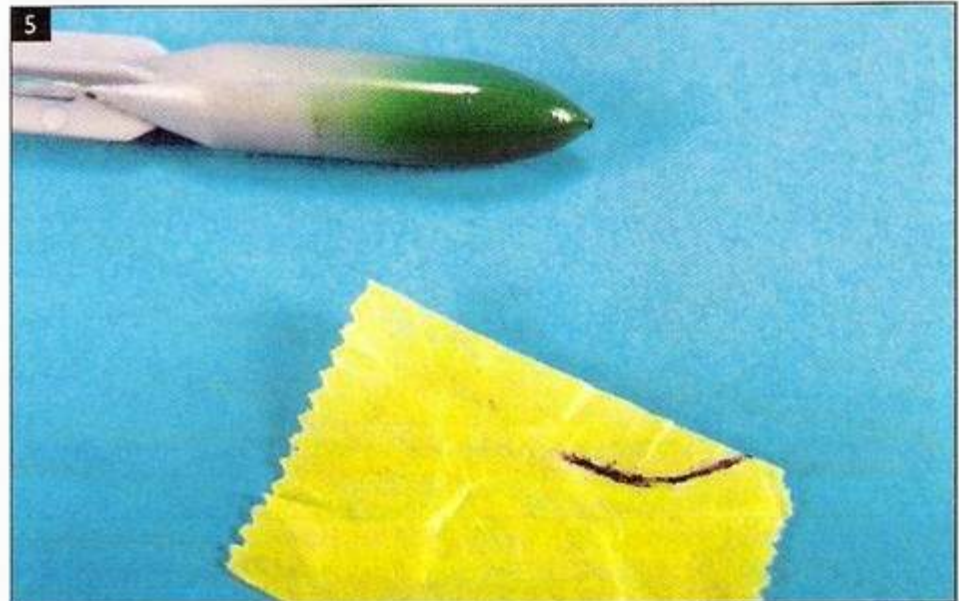
► Step 2

Once the paint is dry, take a small piece of masking tape and wrap it around the end of the bomb, making sure you cover the area where the stripe will be. Use as small a piece of tape as is possible to avoid wrinkles or too much overlapping. In photo 2, you can see the bomb covered with tape.



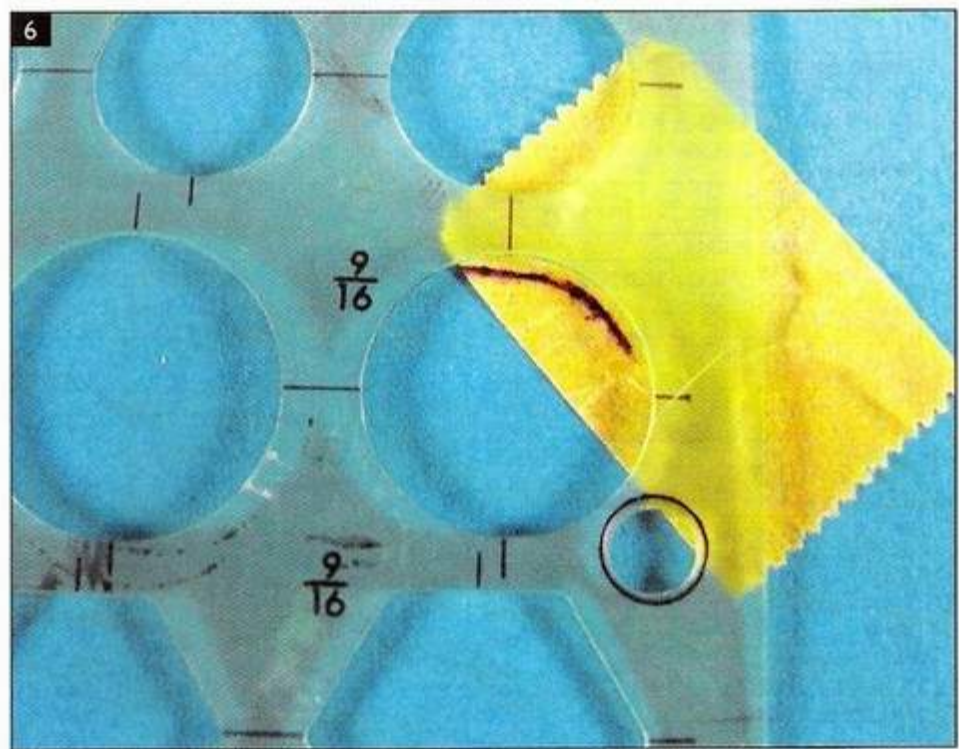
► Step 3

Next, using your circle template, insert the masked end of the bomb into whatever hole in the template will allow the bomb to poke through, as illustrated in photo 3, to the point where you want the stripe and then draw a line on the tape, all the way around the bomb, with either pen or pencil, as seen in photo 4.



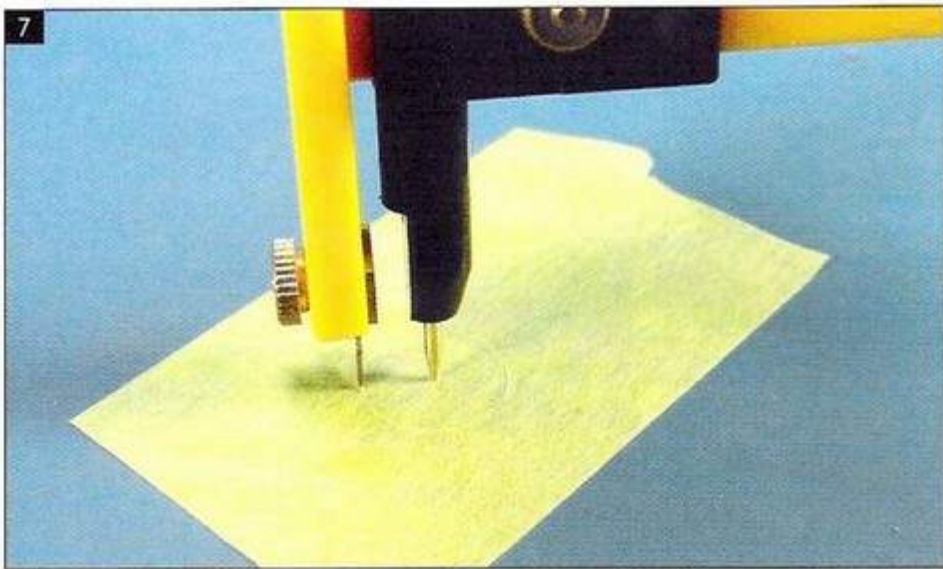
► Step 4

Now, peel off the tape and lay it out flat. As seen in photo 5, you will have a piece of tape with a short, slightly curved line.



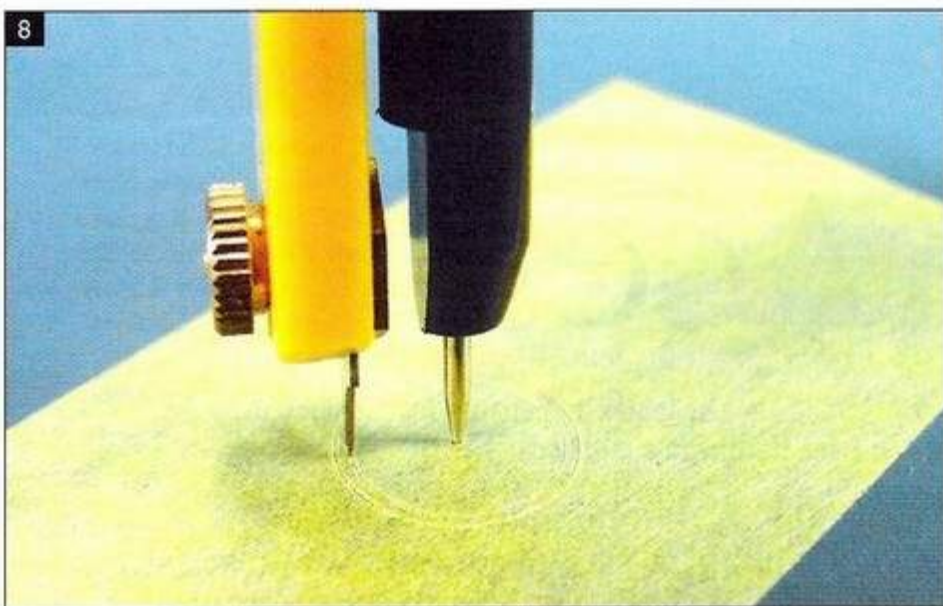
► Step 5

The next step, as seen in photo 6, is to match up the curvature of the ink line, to a hole in the circle template, which has the same curvature. I can tell you, it will NOT be the same size hole as used in photo 3. It does not need to be exact, but the closer the better. In this case, the curve matches a hole 9/16ths of an inch in diameter.



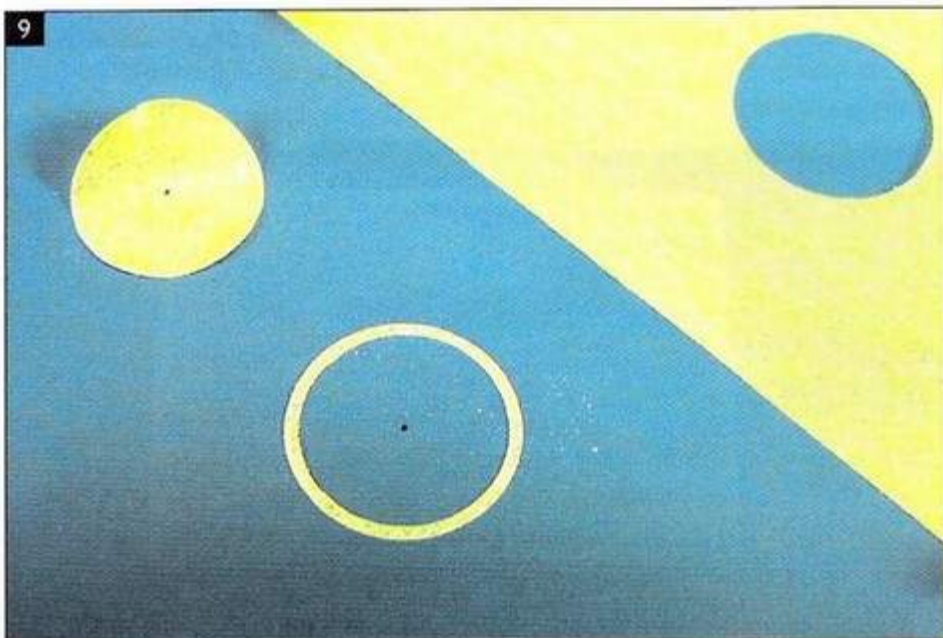
► Step 6

You no longer need the piece of tape with the ink line. It will be replaced with a new piece, which is laid out on a cutting surface. We are now getting to the basic maths steps. Using the circle-cutter, set it to cut a circle equal to the diameter of the hole selected in photo 6. For the mathematically challenged, this means you would need to set the radius of the cutter at $9/32$ nds of an inch. As shown in photo 7, a circle is being cut into the new piece of tape.



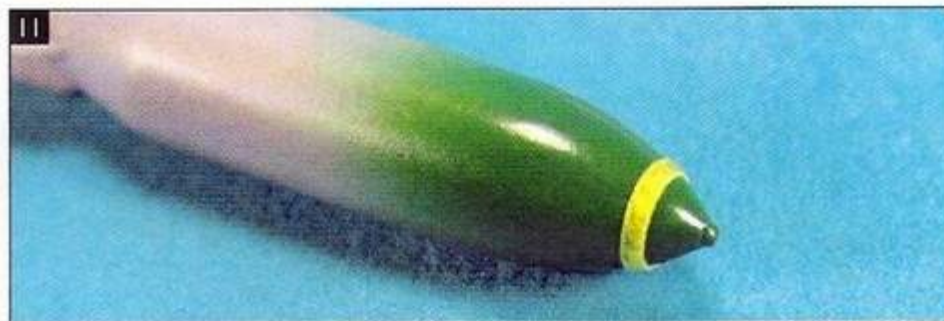
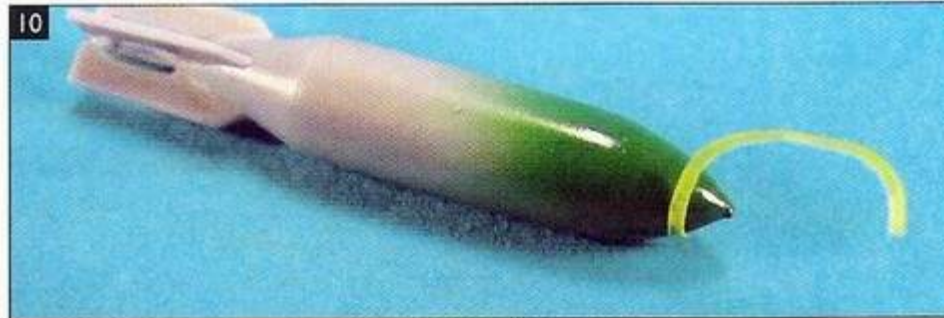
► Step 7

Then, adjust the circle cutter slightly to allow it to cut a smaller diameter than what was just cut in photo 7. Place the point of the cutter in the same centre hole as before and make another cut, just inside the previous, as illustrated in photo 8.



► Step 8

When you remove the excess tape, you are left with a ring of tape as shown in photo 9, which will be used to mask the stripe on the bomb's nose. In reality, with that one ring of tape, you should have enough to mask out about three bombs.



► Step 9

Using a section of the tape ring, place it where you want the stripe on the bomb, as seen in photo 10, and wrap it around the nose as per photo 11. Because of the curve in the tape, it will conform to the compound curves of the bomb with next to no wrinkling – something that would prove impossible if a straight piece of tape was used. In case the tape does not line up exactly, try to ensure that the area where the two ends of the tape meet will be hidden once the bomb is in place.



► Step 10

The bomb can now be painted in your choice of colour(s) and once the painting is done, just peel off the tape and admire the perfect ring(s) on the nose – as shown in photo 12. All of the above steps can be repeated should you need concentric rings on your bombs. Whilst the whole process sounds rather tedious and long, it should take no more than five minutes from start to finish.



Using this technique, I was able to mask the rings on all fourteen bombs in a Tamiya Lancaster in about 10 minutes – as seen in photo 13. If you are not comfortable *painting* the rings on your bombs, this same approach can be used, by substituting appropriately coloured decal film in place of the tape and skipping Steps 1 and 10. **AM**



Ace of Aces

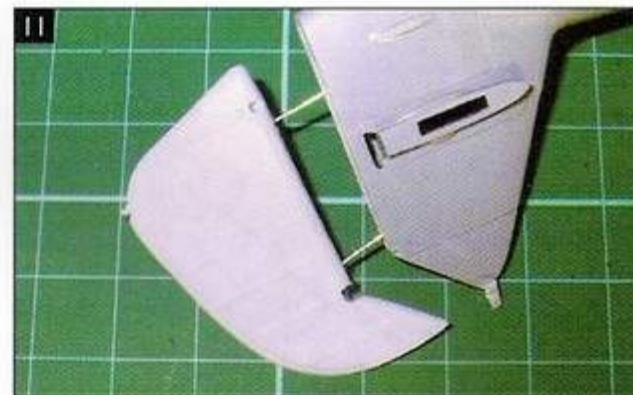
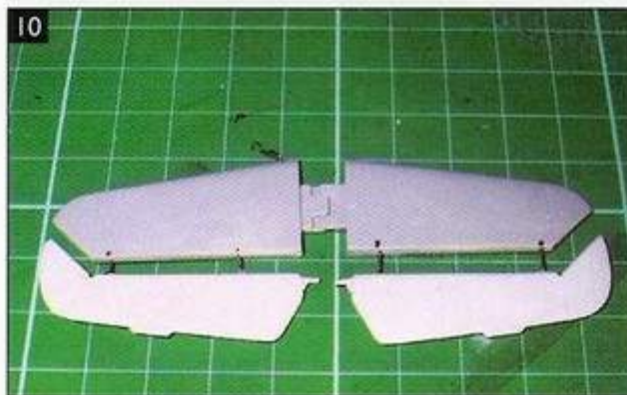
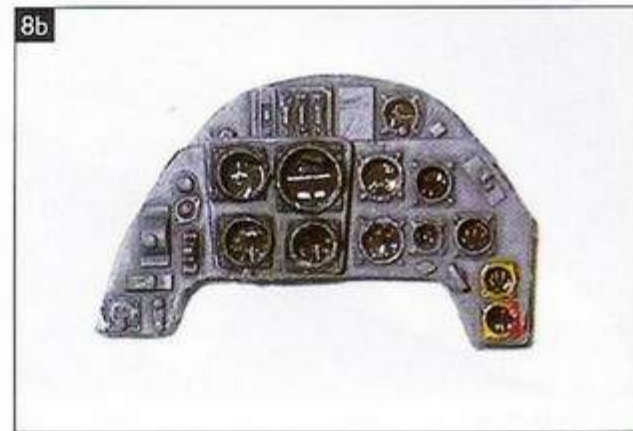
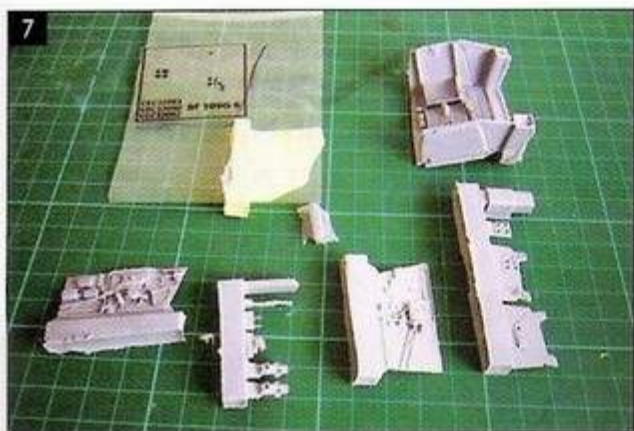
Michael Ullman offers some suggestions about late-war Luftwaffe camouflage schemes and applies his research to two 1/32 scale Hasegawa Bf 109s he built in Erich Hartmann's markings



FOLLOWING THE RELEASE OF HASEGAWA'S 1/32 SCALE Bf 109G and Bf 109K kits, I decided to build representations of two of the mounts flown by Erich Hartmann – the world's most successful fighter pilot with 352 confirmed victories, (photo 1). Fortunately, in the Bf 109G boxing, (photo 2), Hasegawa have selected Hartmann's Bf 109G-6, 'Yellow 1' as one of the two decal options, with his then 122 'kills' on the rudder. Hartmann achieved his 122nd victory on 2 October 1943.

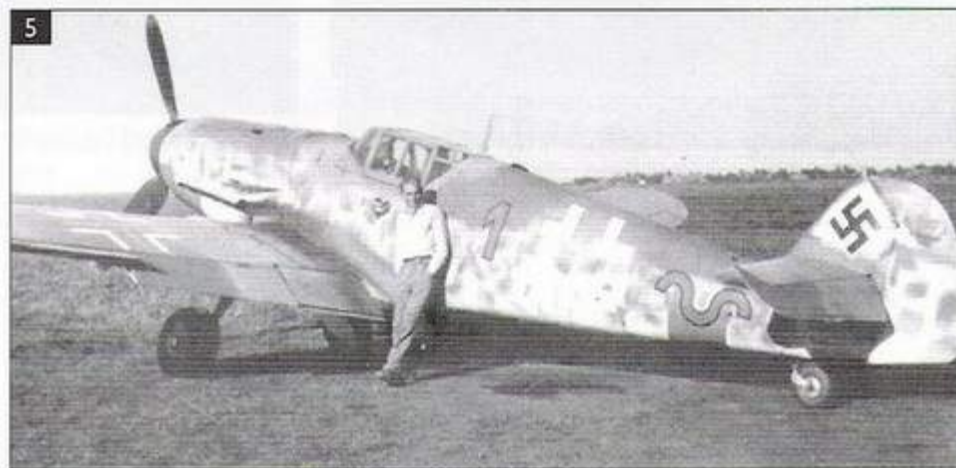
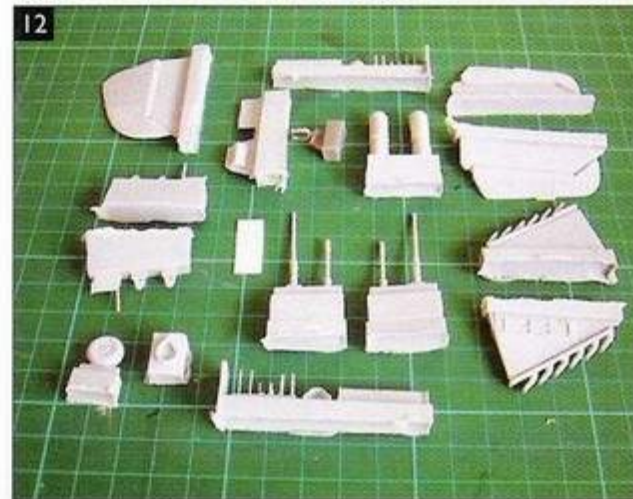
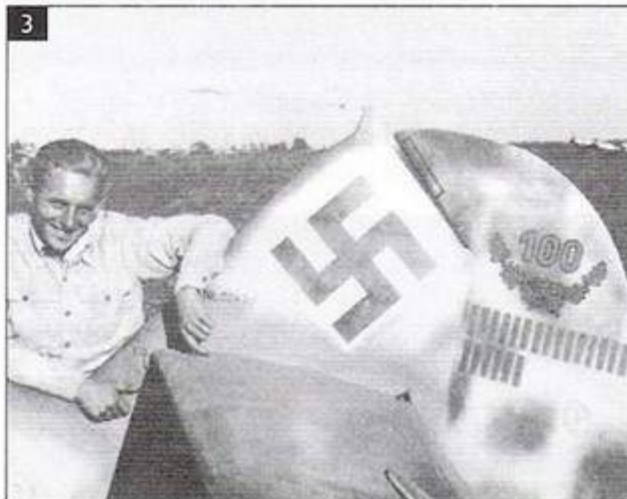
During this mid-war period, Hartmann's confirmed victories grew rapidly and several photographs of 'Yellow 1' were taken on the same day of, or very shortly after, his 122nd victory, (photos 3, 4, and 5). By 29 October, Hartmann had achieved his 150th victory – twenty-eight 'kills' in twenty-seven days!





Photographs of 'Yellow 1' reveal it to be *Werknummer* 20499. Aircraft from this block, (20000 to 20800), were produced by Wiener Neustadt Flugzeugwerke, (WNF), from June to August 1943, fitted with the short antenna mast and the so-called 'Galland-Panzer' pilot head protection armour glass and Erla Haube canopy hood, points to consider during assembly of the kit. Also, the aircraft was probably built as a 'trop' version, as attachments for the tropical umbrella are clearly visible (photo 6).

The Hasegawa kit offers two decal options, (including a complete set of stencils for a Bf 109G-6); Erich Hartmann's 'Yellow



1' and an aircraft flown by Gerhard Barkhorn. Unfortunately, in comparing the painting instructions with photos of the real aircraft, it would appear that Hasegawa have made a few mistakes. Hartmann's aircraft had fewer stencils than the instructions show and I was not entirely happy with the suggested colours for the camouflage of Hartmann's aircraft, but more about this later.

Although the kit decals react perfectly with Gunze Sangyo's 'Mr Mark Softer' decal solvent, they are a little thick and somewhat translucent so I used aftermarket decals, including a swastika, from the Aero-Master range, which were much better than the kit decals.

As the kit makes up into an excellent Bf 109G-6 straight from the box, I will just go through the major alterations, modifications and additions I made.

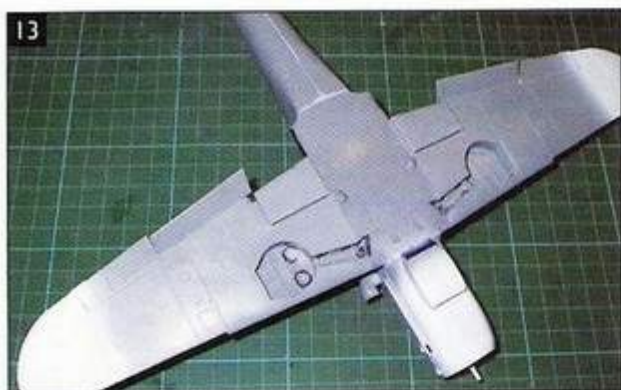
I replaced the cockpit interior with the Cutting Edge Cockpit Set, (photo 7). The two-page instruction sheet contains much information and many detail photos. The resin parts are well cast and flash free and contain a micro film for the instrument dials, (photos 8a and



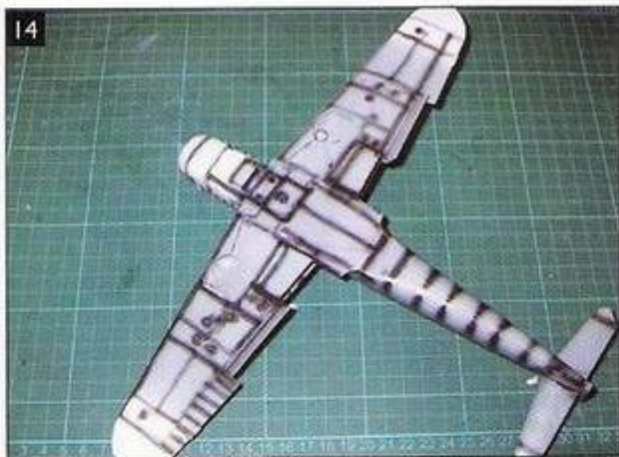
8b). They are a big improvement and make for a much better detailed cockpit. The pilot's harness is made from a flexible resin which allows you to fix the harness, with super glue, in any position you want. The rudder and the elevators were also replaced with parts from the Cutting Edge set, (photo 9), and attached using metal pins, (photos 10 and 11).

Instead of using the standard canopy, (parts B15 and B16), I used part A26, the 'Galland-Panzer' hood with the clear armoured glass pilot's head protection part. The ring antenna was removed from part M12 and painted black, as per photos of the original aircraft.

In addition to the Cockpit Set, I used the Cutting Edge Detail Set which also improved the basic Hasegawa kit. Included in this set are the exhaust stacks, the fuselage gun muzzles and the tailwheel – the very areas that the Hasegawa kit is lacking in detail, (photo 12). The set also contains more wonderful detail parts like the tropical filter, separate small cooling intakes, the starter crank, separate wing cooler intake lids, separate oil cooler exhaust lids, a FuG 16Y ring antenna, the 20mm 'gondola' gun barrels and a new battery compartment cover.



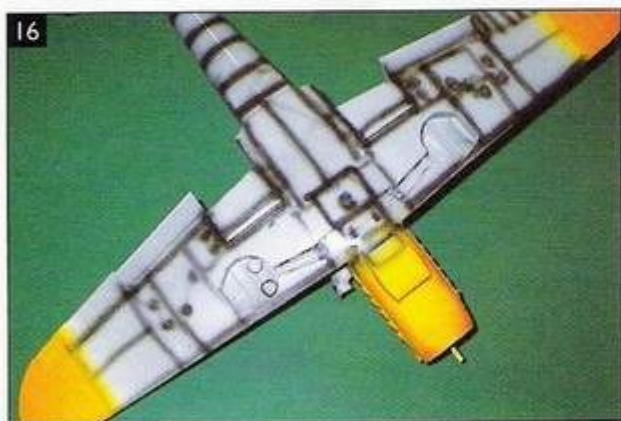
13 Underside of the model. Before I applied the yellow 'Russian Front' i/d wing tips and engine underside, I sprayed the areas in white to provide a base coat to enhance the yellow



14 Pre-shading on the underside...



15. ... and the upper surfaces



16 After the pre-shading I sprayed on the yellow areas



17 I used photocopies of the kit's painting instruction drawings, enlarged to 1/32 scale, as a mask for spraying the camouflage pattern



18 Close-up detail photo of the port side wing root after finishing the camouflage



19 The model after finishing the paint job. Note the angle of the landing gear legs. The kit's clever construction gives the correct angle



20 Another view of the finished paint job – note the high gloss shine of the Xtracolor paints I used



21 The upper surfaces with the black ink wash in the recessed panel lines...

Painting 'Yellow 1'

As I stated previously, Hasegawa's painting instructions for Hartmann's 'Yellow 1' appear to be in error. Comparison of existing original photos shows that although the fuselage may have been painted in the usual RLM 74 *Dunkelgrau*/75 *Mittelgrau* upper surfaces with RLM 76 *Lichtblau* sides and under surfaces, the upper surfaces of the wings and the tailplanes appear to have a much darker colour that was used to replace the lighter grey RLM 75 *Mittelgrau*.

In my opinion, based upon contemporary photos showing the upper surfaces of the aircraft, the tone of the darker colour on the wings is exactly the same as that on the propeller. As propellers were invariably painted in RLM 70 *Schwarzgrün*, (as a anti-glare measure), it would seem that Hartmann's aircraft had RLM 74 *Dunkelgrau* and RLM 70 *Schwarzgrün* camouflaged wing and tailplane upper surfaces, which is how I finished my model!

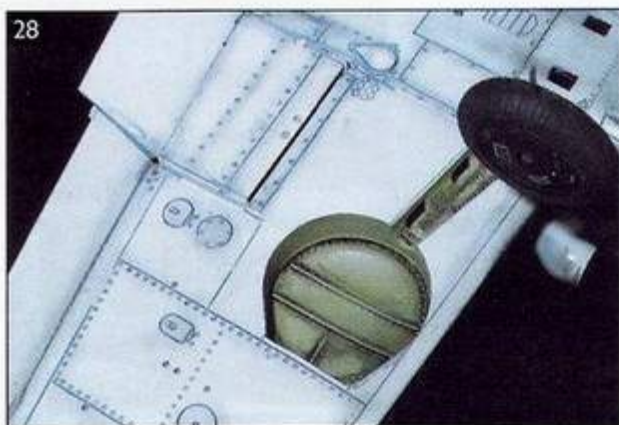




... and the underside of the model with a grey ink wash in the panel lines



Close-up of the cockpit area with the straps made out of flexible resin. I am not totally happy with the result, as I do not think the resin is flexible enough



Detail photo of the port wing underside showing how the dark wash and dry brushing gives a life-like appearance of the model



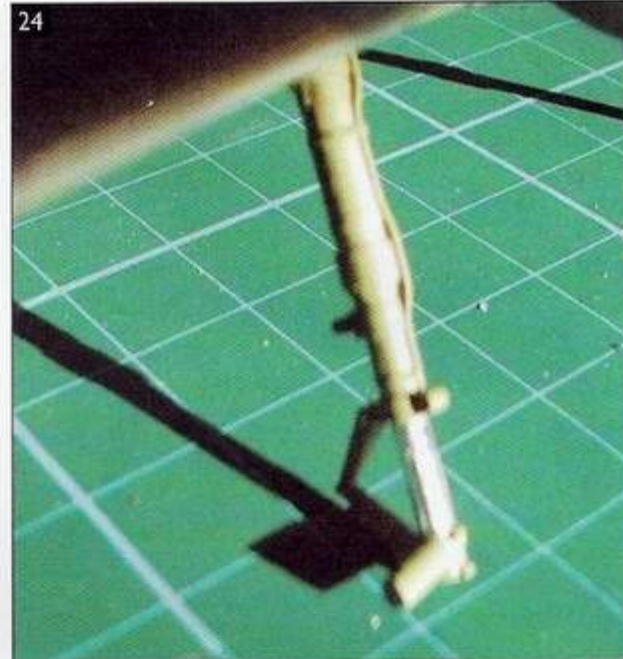
The underside of the model after polishing to remove the excess ink wash



The fit of the kit's clear canopy parts was exceptional



Close-up detail photo of the decal of the 'open' fuselage Balkenkreuz



Detail photo of the starboard main landing gear leg showing the chrome foil I used to represent the hydraulic damper section



The well-fitting clear canopy parts from above





Hartmann's Bf 109K-4

The last aircraft that Hartmann flew in World War Two

On the morning of 8 May 1945, Erich Hartmann and *I Gruppe* of JG 52 flew their last operational sortie of World War Two. Operating out of Deutsch Brod, (now Havlickuv Brod), in Czechoslovakia, I/JG 52 was ordered to see how far away the advancing Soviet forces were, and in an engagement with a formation of VVS Yak-9s over Brünn, (now called Brno), Hartmann claimed his 352nd, and last victory.

As far as I am aware, no photographs exist of the last aircraft that Erich Hartmann flew. However, there is a photo showing his Bf 109G-10 shortly

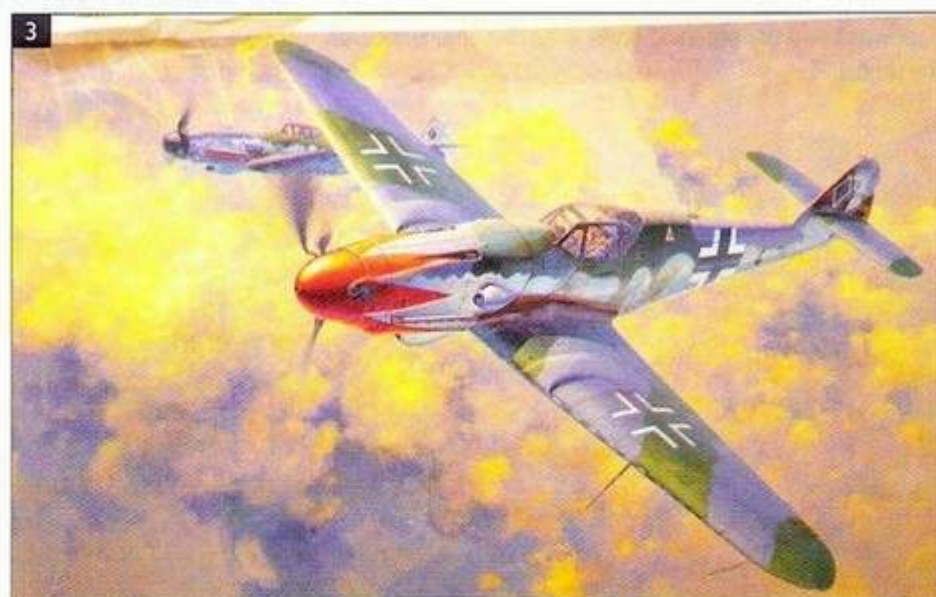
after his 350th victory, but there is strong evidence, not least of which is Hartmann's statement in his autobiography, that the aircraft he flew on 8 May 1945, was a Bf 109K-4, (photo 1).

The question is, was the last aircraft that Hartmann flew a Bf 109K-4 or not? I think "yes". Hartmann's I/JG 52 also shared the airfield of Deutsch Brod with the *Geschwaderstab* of JG 52 for which photographic evidence indicates that they flew Bf 109K-4s, so why shouldn't Hartmann's *I Gruppe Stab*/JG 52 have received a few K-4s?

Typically within the *Luftwaffe*, high ranking and highly decorated pilots often received the latest aircraft. Usually these aircraft were the fastest and in the best

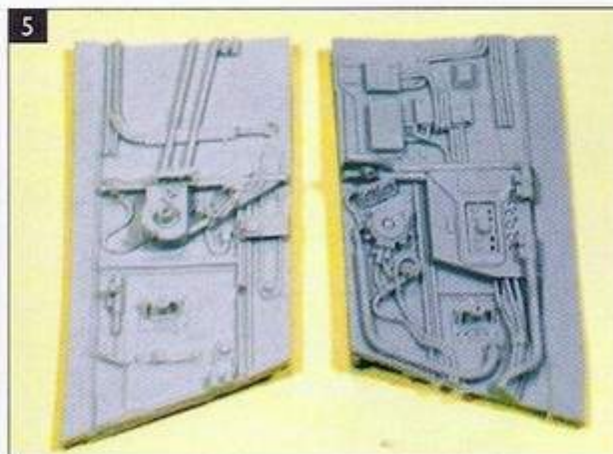
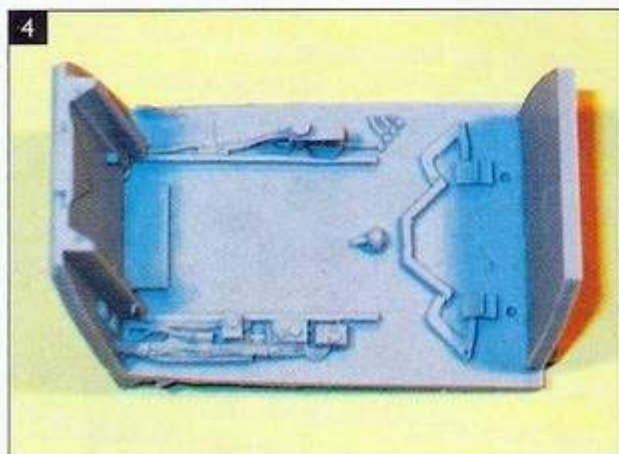
condition which gave them an advantage. Hartmann survived the war, and I am sure that he used this advantage, and my conclusion is that the last mount of Hartmann was a K-4.

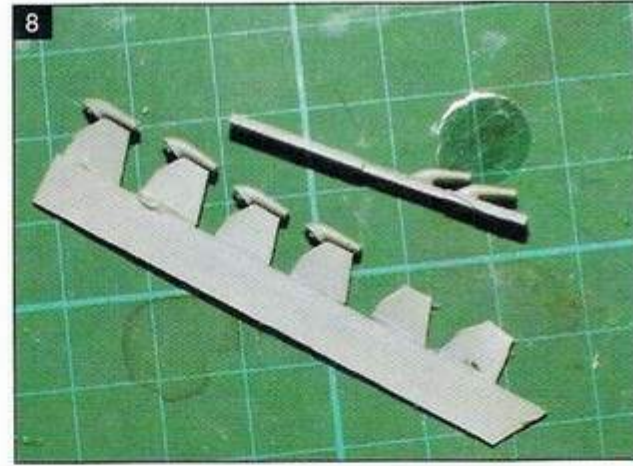
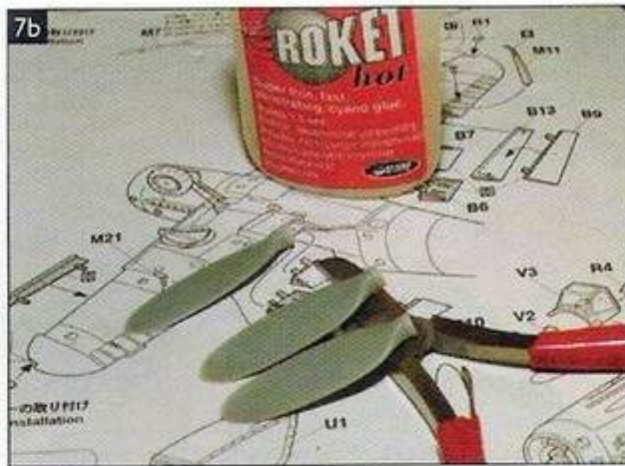
The camouflage scheme of Hartmann's Bf 109K-4 is also somewhat speculative, because no photos exist of this particular aircraft. So, to help me I referred to '*Messerschmitt Bf 109K camouflage and markings*', by



Messerschmitt Bf109K-4

1:32





Tomas Poruba, (photo 2). This author has collected a mass of photos over the years and based upon these photos, he is able to give a paint scheme for every production batch. My model was in the *Werknummer* 334xxx to 335xxx range – the final Bf 109 K-4 production batch.

Following his advice and using photos as reference, I painted my model K-4 in a typical *Luftwaffe* late-war fighter scheme of RLM 75 *Mittelgrau*/83 *Dunkelgrün* upper surfaces with an RLM 82 *Hellgrün*/83 *Dunkelgrün* tailplane.

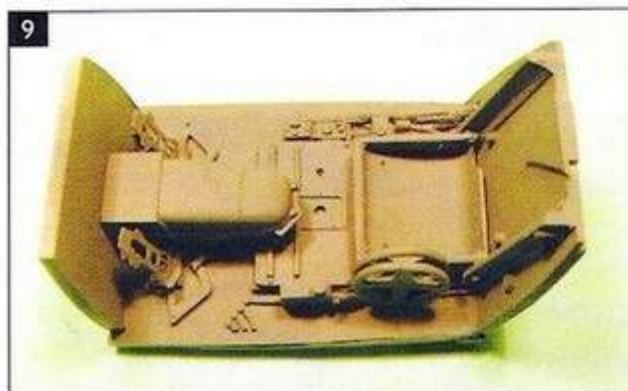
I also used the results of my own research in to the colour of the under surfaces. The under surfaces of many late war German aircraft had areas left unpainted but the RLM issued instructions that the front part of the underside of the wing, the ailerons and the tail was to be painted in the 'camouflage colour RLM 76 *Lichtblau*'. This was to prevent sunlight reflecting off the leading edges of the wing, although the rest of the underside of the wing

could be left in bare, unpainted, natural metal.

Experience gained by *Luftwaffe* fighter pilots showed that they were able to spot unpainted, natural metal finish, USAAF fighters at distances of more than 50km due to the reflection of sunlight on the polished wing leading edges, giving the *Luftwaffe* pilots the tactical advantage of getting into a superior position before any combat began.

Ailerons and elevators were generally fabric covered, and to protect the fabric they had to be painted. Accordingly, the RLM regulations advised that they were to be painted with a coat of camouflage colour, in the case of under surfaces, RLM 76 *Lichtblau*.

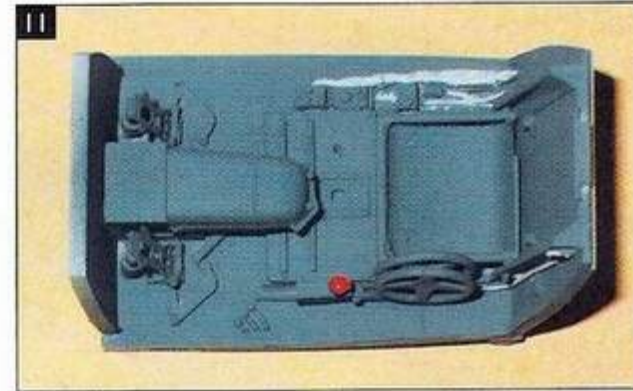
Painting of the tailplane was done for the same reason as painting the ailerons and elevators – the tailplane was made from wood, and wood must also be protected with paint, again in the case of under surfaces, RLM 76 *Lichtblau*. However, the mainwheel wells of many late-war *Luftwaffe* aircraft



The assembled cockpit tub with a base coat of RLM 66



The fuselage halves after the detail painting



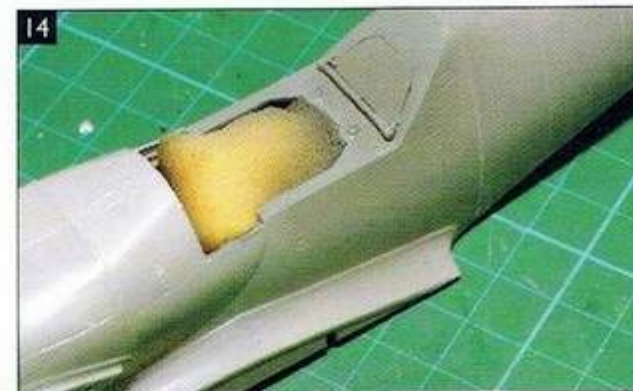
The cockpit tub after detail painting



The instrument panel after detail painting, following painting the dials black, then adding decals for the instrument dials and finally topped off with a 'blob' of Klear/Future



The pilot's harness in place



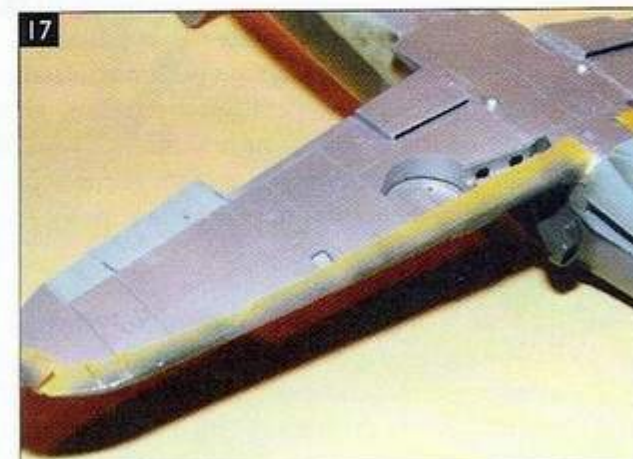
Following the assembly and fitting of the cockpit interior, the fuselage halves were joined, and a piece of foam was fitted into the cockpit to protect it from the exterior camouflage paint spray



The slight gap between wing and fuselage. I used the liquid glue technique to soften the plastic and after a few seconds pressed the parts together. The softened plastic oozed out of the seam, filling the gap, and when dry, was sanded smooth



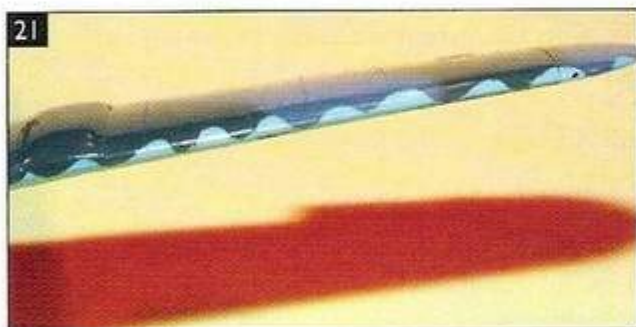
The thin and clear canopy was covered inside and out using Tamiya's wonderful masking tape – and a masking set for the Galland hood from Eduard!



After the entire under surfaces were sprayed with a matt aluminum paint to replicate the bare aluminum, I painted the underside of the engine cowling, leading edge undersides of the wings, the ailerons, the rear fuselage and the tail section with RLM 76 *Lichtblau*



First step in the painting of the upper surfaces was to apply the RLM 75 Mittelgrau. You can also see in this photo the high gloss of the Xtracolor paints. Note the 'greenish' RLM 76 on the fuselage side.



The desired effect after removing the masking tape



The underside of the tail was painted in RLM 76 and I used Xtracolor X261 for the bright green RLM 82 Hellgrün. Note the 'softer' RLM 83 Dunkelgrün mottling on the fuselage sides



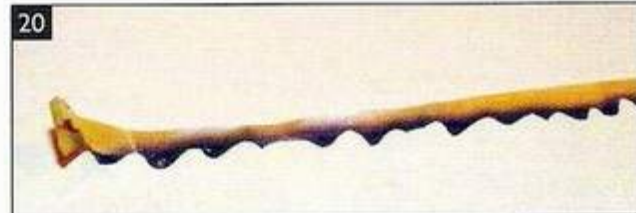
Spraying the RLM 83 Dunkelgrün parts of the camouflage



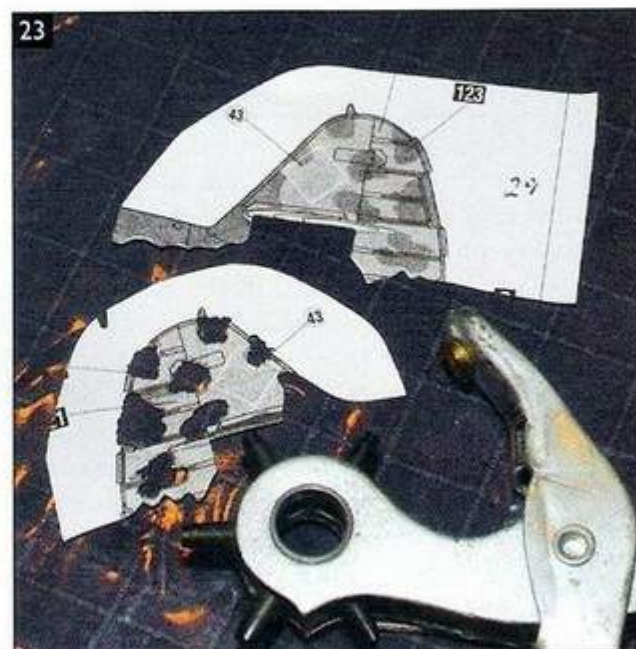
The tail section, originally made from wood and manufactured by a different subcontractor, received a different paint scheme to the rest of the airframe. I used an enlarged photocopy of the Hasegawa kit's painting instruction drawings as a mask...



To recreate Hartmann's 'tulip nose' marking, I made masking tape triangles using the kit decal as a basis. (I don't believe that you can apply this sort of triangle decal without it wrinkling), and sprayed the 'open' areas gloss black



To achieve the wavy lines on the leading edges of the wings I used Tamiya masking tape with a wavy line cut with a sharp scalpel



... and used a hand operated hole punch, (visible in the photo), to make the hard-edged holes in the mask for the dark brown RLM 81 Braunviolett blotches



were left unpainted, in natural bare aluminum, and were not painted RLM 02 Grau as was previously thought.

The greenish variation of RLM 76 Lichtblau

The results of my latest research concern the 'greenish variation' of RLM 76, seen on many colour photos of late-war *Luftwaffe* fighters. My investigations show that these 'different coloured' paints are merely the result of raw material shortages and changes in the make-up of the resulting camouflage paint, rather than different, or new, RLM colours. Various RLM documents I have consulted state this as a fact.

Earlier in the war, German paint manufacturers produced formulas that contained some 30% or 40% of pigment, giving good saturation to the lighter coloured paints, such as RLM 65 Hellblau or RLM 76 Lichtblau, which gave good coverage over the natural metal skin of aircraft. Later in the war, in an attempt to save on raw materials, the percentage of the pigment was decreased.

These early war 'bright' coloured paints didn't contain zinc chromate, a medium well known for its yellow hue, that provided a very effective surface protection for aluminum. However, during the war, the German paint industry introduced zinc chromate into the production of the 'bright' coloured paints although the higher percentages of paint pigment still used at this time easily covered the yellow in the zinc chromate.

Later in the war, the percentages of pigment in the paint was decreased, and was therefore less able to cover the yellow of the zinc chromate, causing the 'colour' of RLM 76 Lichtblau to turn from a light blue-grey to almost a light green-grey! This is the reason for the spread in use of the 'greenish' RLM 76 during the final months of the war.



After removing the mask perfect black triangles. The white trim lines were made with strips of decal later

I used the results of this research in the painting of my model, mixing one part Xtracolor RLM 76 with one part Xtracolor X613 East German MiG 29 Tan to achieve the right shade of greenish colour.

Hasegawa's 1/32 Bf 190K-4

Following the release of the Bf 109G-6 it was almost inevitable that Hasegawa would produce a Bf 109K-4 (photo 3). Both kits share common



I used the same technique for spraying the Gruppe Kommandeur's double chevrons



This underside view of the model reveals the mix of painted and unpainted areas. Of note is the demarcation line between the unpainted underside of the fuselage and the greenish RLM 76 on the fuselage sides. I have never seen a photo of a real aircraft showing this demarcation line, but the factory paint shop drawing of the Me 262 describes such a demarcation line which I adopted



The wings and fuselage were given a wash with black thinned waterproof artist's ink. After polishing only the black ink in the engraved panel lines remained and perfectly prepared the surface of the model for the decals



The white trim lines made from strips of decal



The insides of the main undercarriage covers – left in 'unpainted natural metal' with a dark wash of thinned black artist's oils



Upper and under surface views of the fully decalated and varnished model awaiting final finishing. The panel lines were further emphasised with thinned clear matt varnish tinted with a few drops of black and sprayed onto the model at low pressure. This technique was also used for the exhaust and cordite stains



Attaching the antenna wire – with different viscosity cyano glues from Roket. They are perfect for this job and do not dry white after setting



The canopy hood in place. I made the restraining wire from heat stretched sprue with the spring from rolling thin wire around the stretched sprue



sprues, only the fuselage and a few other detail parts are new. Unfortunately the K-4 has some of the same problems as the G-6 kit. The level of detail of the guns, exhausts and the tailwheel is much poorer than the rest of the kit mouldings. The cockpit is not too bad, but I used the superb Model Design Construction (MDC) detail sets, (photos 4, 5 and 6).

Hasegawa provide two painting options with decals. Both are aircraft from *Stab/JG 52*, with the red tulip nose. The decals are well printed if a little bit thick, as usual for Hasegawa, but they snuggle down perfect with the aid of Mr Mark Softer. I used most of the decals from the kit including the the 'Usch' heart, swastika and the stencils; all the other markings, including the 'black tulip' and the double chevron, were airbrushed.

MDC's Bf 109G-10 Cockpit Set: CV 32006

When I originally started my my model, MDC did not have a K-4 cockpit set available, I therefore used their G-10 detail set. The differences between the G-10 and the K-4 instrument panel are minor, and it is possible that K-4s were fitted with G-10 cockpit parts during production anyway.

MDC offer different detail sets for the different versions that Hasegawa, (and Revell Germany), produce, and they are quite simply the best available for a 1/32 scale Bf 109G. The details are crisp and include such items as a clear part for the fuel flow controller on the right side of the cockpit and the gun covers for the 20mm and 30mm cannon. MDC also provide a Bf 109G/K Corrected Spinner, (CV 32029), (photo 7a). The cannon port and

the slots for the propeller blades (photo 7b), are much better than the kit parts, and they include reproduction data plates for the spinner with corresponding decals supplied. The crisply moulded Bf 109G/K Exhaust set, (CV 32005), (photo 8), offers the same level of detail as the Moskit ones – but is cheaper! **AM**

References

- Modeler's eye series 'Bf 109G-6', published specially for modelling the Hasegawa Bf 109G-6. From my point of view the best book ever published on the topic! Perfect photos of original aircraft that cover every area of interest to the modeller. Because the G-6 and the K-4 share many identical parts, the book is a most helpful reference. Check the photos of the late-war Finnish Air Force G-6, which shows many unpainted areas inside a Bf 109G-6!
- 'Messerschmitt Bf 109K camouflage & markings'. One of the best books on the Bf 109K-4. It includes many photos, superb technical background, colour drawings including camouflage drawings and a list of all Luftwaffe K-4 losses. A 'must' for the Luftwaffe modeller.
- 'Bf 109 F, G & K' by Jochen Prien and Peter Rodeike. If you are a Messerschmitt Bf 109 'freak' you must have this book. Every series with every variation is shown in this book with many, many good photos.
- 'Holt Hartmann vom Himmel', (English translation 'The Blond Knight'). Erich Hartmann's authorised autobiography that tells the story of his life from his youth until the 1970s, written by American authors. Contains a lot of background data but unfortunately not many photos of Erich Hartmann's aircraft. Erich Hartmann died in early 1993.



Nautical Nightfighter

Fairey Fulmar NF Mk II

After a long wait, Tony O'Toole builds the recently released resin, white metal and vacform, 1/48 scale Warrior Model, Fairey Fulmar – in night fighter markings!

■ THE FAIREY FULMAR WAS A SPIN OFF FROM A 1937 FAIREY private venture prototype designed by Marcel Lobelle which been designed in response to the RAF's specification P4/34 for a high speed light/dive bomber. This new aircraft strongly resembled the same company's Battle bomber but was a smaller and sleeker aircraft with a much stronger airframe to help it to cope with the dive bombing requirement. Although another design, by Hawkers, which eventually became the Hawker Henley, was also put forward to fit this specification, the Air Ministry requirement was later dropped, so Fairey set about altering their design to meet an Admiralty specification for a monoplane 2-seat fleet fighter instead.

This naval requirement came about due to the fact that by 1938 the Fleet Air Arm was still operating the biplane Hawker Nimrod in the fleet fighter role and its intended replacement, the monoplane, multi-ruled, Blackburn Skua was late entering service and had lower performance than was originally expected. A number of Gloster Gladiators were ordered and converted for carrier service as an interim measure but, as the Navy was at last in the process of regaining control over its air arm from the RAF and had no wish to be fighting modern monoplane opposition in antiquated biplanes, an urgent solution to this problem was sought.

Although the new aircraft would be only the second monoplane design to enter Royal Navy service with a requirement to be the first with an eight machine gun armament, one typically old fashioned requirement left in this otherwise modern specification was the need for a 'second seat' to be included in the design. This was due to the misguided preconception that when operating over the sea the pilot would need an observer aboard so that he could find his way back to the carrier. The inclusion of this second seat would ensure that the forthcoming design, no matter how modern it was, would be larger and heavier than most other single-engined fighters of the day, but as the Admiralty considered that the Fleet would be operating out of the range of any such opposition, this was not regarded as a problem. How naive this assumption would prove to be considering the years of hard fighting against

all types of aircraft that the design was destined to face!

The Fairey Fulmar Mk I, as the fully developed new design was named, entered squadron service in June 1940 with No 806 Naval Air Squadron at Royal Naval Air Station Worthy Down, near Winchester in Hampshire. It was well received by its new crews, due to its responsive controls, firepower, manoeuvrability, comparative high speed, (when compared to other British naval fighters), and the strength of its airframe. The new aircraft was powered by a Rolls Royce Merlin VIII engine, armed with eight 0.303 Browning machine guns and although it had a slow climb rate, its top speed was 265 mph and it possessed a lengthy endurance of over four hours – a handy thing to have in a naval aircraft.

Production at the Heaton Chapel works in Stockport was slow at first but No 808 NAS became the next unit to equip with the type and although sent north to guard the base of the Home Fleet at Scapa Flow in the Orkneys, they became one of only two Fleet Air Arm squadrons to officially take part in the Battle of Britain due to the fact that they were operating under RAF control.

Once production was in full swing other front line units were quickly equipped with the new fighter including Nos 807, 803, 800, 804, 805, 807, 809, 813, 815, 825, 827, 835, 879, 881, 882, 884, 886, 889, 893 and 897 NASs.

The first squadron to see service aboard an aircraft carrier was No 808 NAS when they replaced No 803 NAS on *HMS Ark Royal*. This was due to the fact that No 803 NAS was handing in its Skuas to retrain on Fulmars. *HMS Ark Royal's* first cruise with Fulmars aboard was to the Mediterranean, where the ship was to reinforce the Mediterranean Fleet, and it was here that the Fulmar claimed its first 'kills' when, on 2 September 1940, during multiple engagements, five Italian aircraft were claimed Destroyed and one Damaged for no losses! Not a bad start and the Mediterranean Theatre was to prove the main arena for Fulmar combat operations over the next three years, including the 1942 convoy to Malta, codenamed 'Operation Pedestal'.

Other areas where the Fulmar made its mark was in its use as a catapult fighter alongside the Hurricane during the desperate days before escort carri-

ABOVE Fairey Fulmar NF Mk II, BP791 BO•J of No 784 NAS, a night fighter conversion unit, set up in 1942 at Lee-on-Solent to train potential crews. With the need for operational Fulmars, this unit was relocated to Drem in Scotland and was split up into three front-line Night Fighter Flights, with three Fulmars each. These Flights subsequently flew from the escort carriers, HMS Nairana, Vindex and Campania, which regularly undertook the Arctic runs.



ers had evolved; as a land based RAF squadron, (No 273), albeit manned mostly by FAA pilots during the defence of Ceylon; operations in the Indian Ocean; the invasion of Madagascar; the Atlantic and the Arctic convoys to Russia; and its last use as a front line aircraft aboard the fleet carriers of the Royal Navy was during 'Operation Torch' – the Anglo-American landings in North Africa in November 1942.

By 1943, most Fulmars in service were used in the training role, however it was not the end of its career as a front line fighter as it continued to prove its worth aboard the smaller escort carriers until the final year of the war.

Fighting at Night

The Fleet Air Arm had been closely following the RAF's development of Airborne Interception Radar since the early days, when the secret equipment had been installed in Blenheim night fighters, then into Beaufighters and Mosquitoes, but until the equipment could be made small enough to fit into a single-engined aircraft they would be unable to use this vital tool at sea.

The Royal Navy's Night Fighter Development Unit was No 746 NAS initially based at Ford and then Wittering, which was attached to the RAF's Fighter Interception Unit and who worked closely with the Telecommunications Research Establishment at Defford. It was this unit that eventually managed to 'shoehorn' an AI Mk IV set inside a Fulmar, albeit forcing its large antenna to be festooned along the wings, causing so much drag that the aircraft's top speed was reduced by 20mph.

Most of this work was regarded as purely for developmental purposes, pending the arrival of the more powerful Fairey Firefly, but as the in-service date of the new aircraft continued to slip and problems were encountered with its compact centimetric radar, it was decided that the Fulmar would have to be pressed into service in its place. This was mainly due to an urgent requirement for a fighter that could be used on the Arctic convoy runs during the long periods of winter darkness, when conventional day fighters were having problems intercepting night-flying aircraft from Norway that were shadowing the convoys.

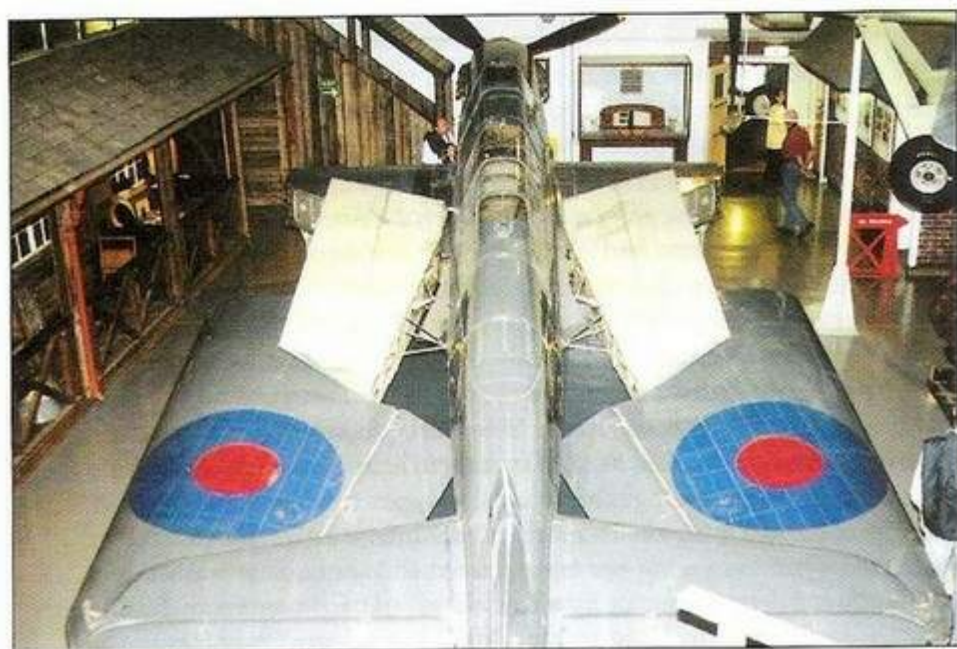
The version of the Fulmar that was converted for this work was the

improved Mk II, with an uprated Merlin XXX engine, and as well as the addition of the radar equipment, the eight 0.303 machine guns were replaced on the night fighter, named NF Mk II, by four of the harder hitting 0.50 Brownings.

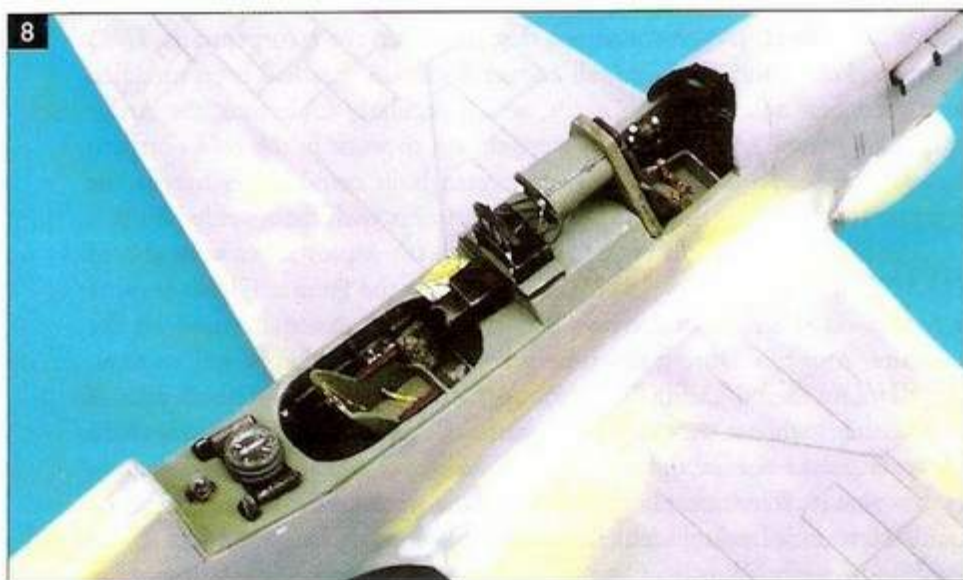
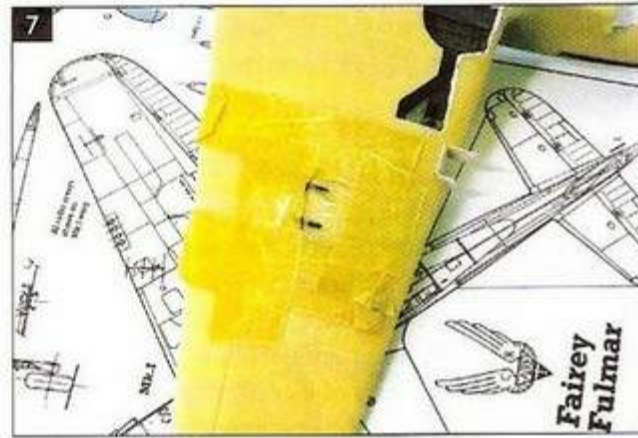
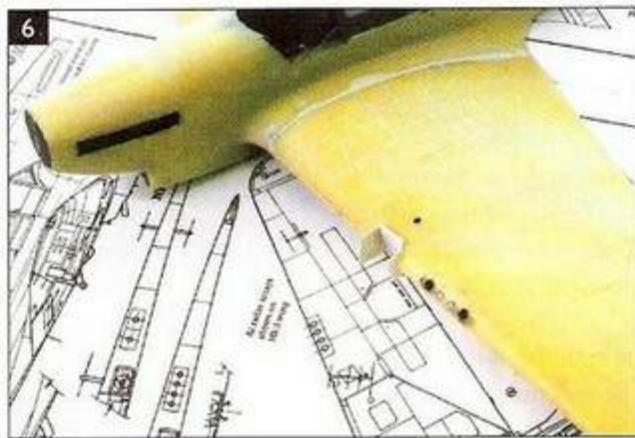
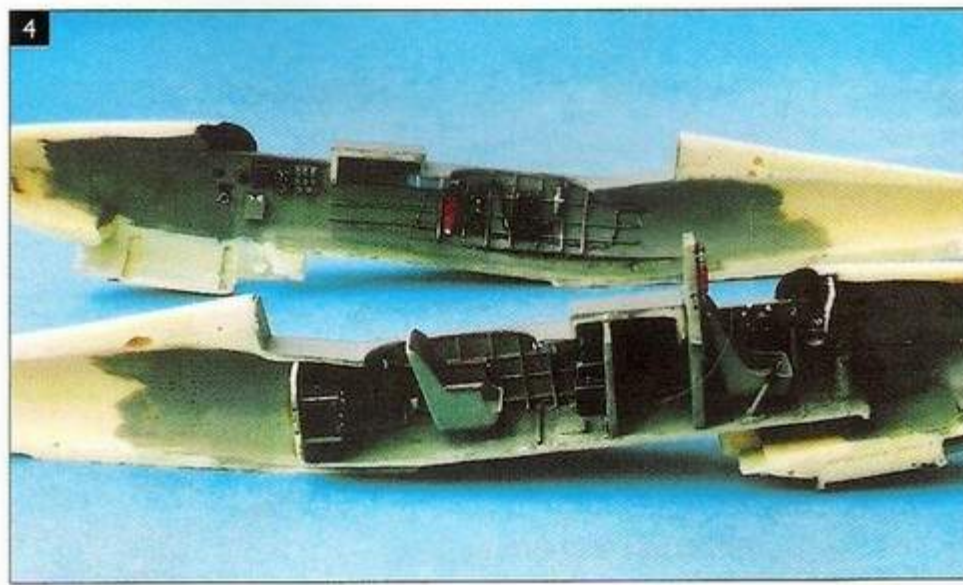
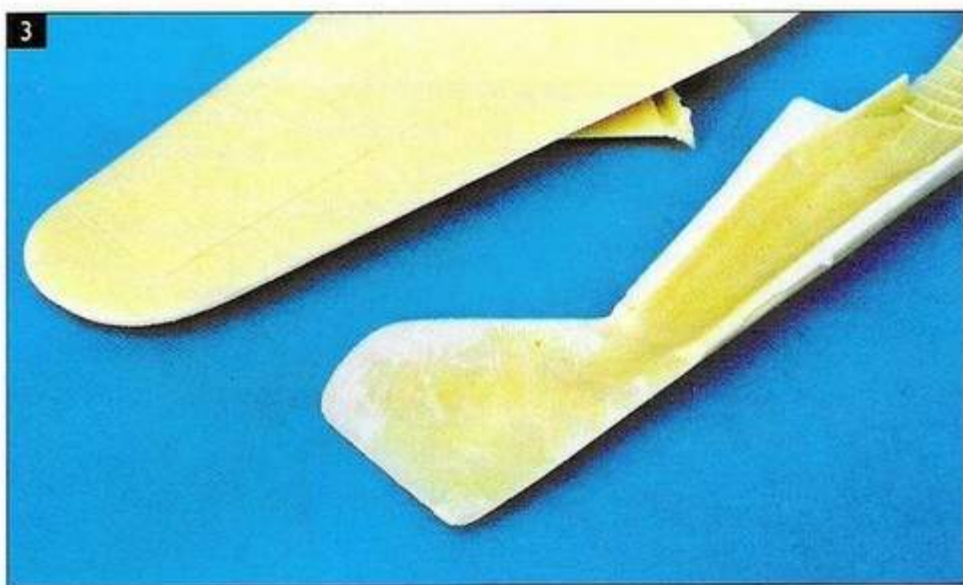
A night fighter conversion unit, No 784 NAS had been set up as early as 1942 at Lee-on-Solent to train potential crews, many of whom went on to serve on detachment to RAF night fighter squadrons, but with the need for operational Fulmars this unit, which was based at Drem in Scotland, was split up to spawn three front line Night Fighter Flights which were equipped with three Fulmars each. These Flights then detached to the composite Swordfish/Wildcat or Hurricane squadrons that flew from the escort carriers, *HMS Nairana*, *Vindex* and *Campania*, all ex-merchantmen that had been modified into their new role in British yards, which regularly undertook the Arctic runs. The reason why these ships were chosen to work in the cold northern waters was due to the fact that their riveted hulls could better handle the freezing temperatures than the Lend Lease carriers with their welded hulls.

The first Fulmar Night Fighter to operationally deploy at sea went aboard *HMS Nairana* in February 1944. For over a year the Fulmar Flights became a fixture on the Russian convoys and they were occasionally used on the Gibraltar runs too. During this time it became obvious that as well as proving useful for their night interception capability they could also be effective in poor weather when it was easy for an enemy aircraft to slip into a handy cloud for cover from a normal fighter. The downside of this 'poor weather capability' was that it often meant landing back on the small carrier in heavy seas and quite a few deck landing accidents occurred as a result.

Due to a combination of bad luck and a steady decline in the number of shadowers being detected, the closest the Fulmar NF Mk II came to a successful interception was on 8 February 1945, during a run to Murmansk. The pilot, Sub Lieutenant Hicks, took off from *HMS Campania* to intercept a shadowing Ju 88, but as the Junkers possessed a slightly higher top speed than the Fulmar, the pursuit lasted for over an hour whilst the night fighter tried to catch up and just as they managed to close to within two miles the radar decided to 'pack up', allowing the Ju 88 to escape unharmed!



The first Fairey Fulmar to be built, N1854, and the sole survivor! Currently on display at the Fleet Air Arm Museum, Yeovilton, where close study and inspection of the machine can be achieved. Unfortunately the paint scheme is inaccurate, being Dark Sea Grey with Sky undersides. None the less, it is a REAL Fulmar and as such is priceless. Note the wing fold details and mass of mushroom-headed rivets!



Despite the lack of success, much experience of night and all-weather carrier operations was gained during the time that the Night Fighter Fulmars were deployed at sea. The small cadre of men that had developed this special 'art form' went on to establish night and bad weather carrierborne flying in the peacetime Navy until, by the mid-1950s, it was regarded as a vital requirement of any Carrier Air Group and as technology progressed, more aircraft received equipment to allow them to fly at night and in poor visibility so that by the 1960s all carrier pilots were trained to fly from a deck in all weathers, day and night.

The Fulmar deserves its place in history as the first in a line of British radar equipped carrier aircraft such as the Sea Hornet, Sea Venom, Sea Vixen and Buccaneer, which will sadly come to an end with the withdrawal of the excellent Sea Harrier FA.2 in 2006.

Modelling the NF II

For years, the only way of adding a model of a Fulmar to your collection was the Rareplanes vacform kit and later the Pegasus limited run injection kit, until the release of the excellent Vista injection-moulded kit, which has since been re-released under the Revell and Smer labels. All of these kits were in 1/72 scale. Then, after a long wait, the release of a resin, white metal and vac-formed kit in 1/48 scale was quietly announced by the Polish manufacturer Warrior Model, who had previously made 1/48 scale kits of the Blackburn Skua and Roc. Having made both of these models already and knowing the acceptable level of detail they possessed, I wondered if the Fulmar would be the same, (photo 1).

I was pleased to find the detail in the Fulmar kit surpassed the previous two offerings, with crisply detailed and extremely complex moulded parts, combined with a large and well printed decal sheet, with seven options, including both Mk Is and Mk IIs, and good instructions with side views and

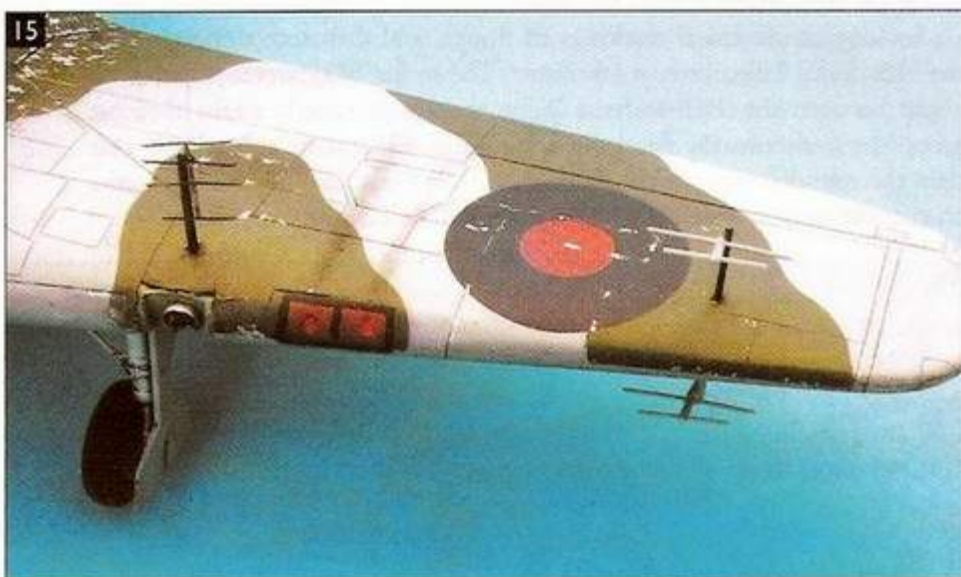
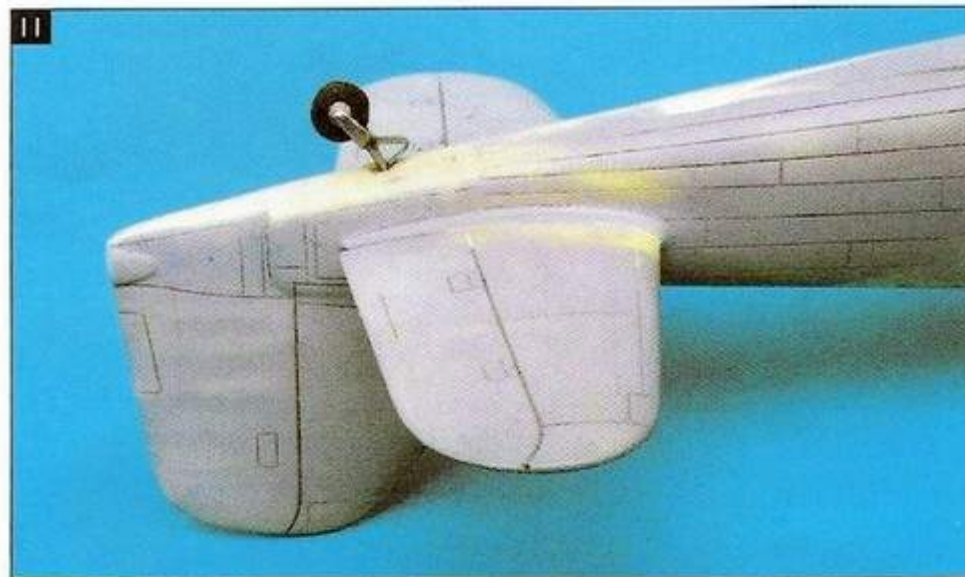
camouflage scheme details, (photo 2).

Unlike any other resin kit that I had ever built before, there was no need to saw the parts from any resin pour lugs as the parts had already been sawn off and even sanded down and thinned out by Warrior Model, resulting in extremely thin trailing edges to the wings and tailplanes! (photo 3). I started construction immediately!

The parts break-down is quite conventional with the fuselage halves, upper wing halves and single piece lower wing (which has the correct dihedral already set), mainwheel wells, mainwheels, tailplane, most of the cockpit interior parts, propeller, radiator, exhaust manifolds, tailwheel and bombs, all in resin. The vacformed pieces are limited to the canopy glazing for both cockpits, including the solid area in between them, and a cover for the landing light, whilst the only white metal parts are the main undercarriage legs, retraction jacks, radio mast and arrestor hook. It was a good idea to use white metal undercarriage legs due to the weight of the finished model but unfortunately one of the legs was still not to be up to the job on my model and unfortunately buckled under the strain!

All the interior parts were carefully removed from the small plastic bags and painted using Polly Scale Interior Green Grey, followed by a watercolour wash of Paynes Grey applied to various items to highlight the detail. Specific parts such as the fire extinguishers, radios, oxygen regulators and batteries were detail painted using the Humbrol colours mentioned on the instruction sheet, and when everything had been painted and watercolour-washed, the cockpits were dry brushed using silver, white and light green to further enhance the detail.

During the latter stages of painting, each of the interior parts were slowly but surely fitted into place until eventually both the cockpits were fully assembled and inserted into one of the fuselage halves (photo 4). The next job was the wings.



Usually, one of the more daunting aspects of any limited-run or resin kit is the thinning down of the parts, especially the trailing edges of the wings and tailplanes, with all of the mess, dust and wearing of a mask that this entails, but with this kit, most of the work had already been done and all that was required was to lightly sand all of the mating surfaces before dry fitting them into place. The wings were then test fitted to the fuselage, the wing roots needing just a little trimming before a good fit was achieved. Once I was happy with the fit, the separate resin wheel wells were dropped into place in the lower wing half and then the top 'halves' were fixed in place using superglue and held in place with tape to dry.

The mating surfaces of the fuselage halves were also slightly sanded before they too were joined using superglue and whilst held together with tape, the fuselage was fitted to the wings. The slight gap between the upper wing/wing roots was covered in filler to hide any seams, as were the fuselage half joints. The tailplane was also added at this stage (photo 5).

Although a clear vacform cover is provided for the landing light the area of the wing where this goes is solid and needs to be cut out. A razor saw was used but it then needed to be boxed in using plastic card to create the walls as the inside of the wing is hollow. The plastic card was trimmed and the area was painted Interior Green Grey before a landing light lens was added – sanded down and converted from one left over from an old 1/24 scale Airfix Hurricane that had seen better days. A ledge was later cut around the recess for the landing light cover to fit on and it was cut to the correct size, dry fitted in place and trimmed to fit then left off until after painting (photo 6). When it was eventually fitted it was fixed in place using Humbrol Krystal Klear.

By this time I had decided that I was going to build a night fighter. I have always liked this version and the decals for the famously photographed 'Ringa' were in the kit, so I marked out on the wings the most likely places for the radar masts to sit, using what little and varied references that were available

-including some rare pictures from my friend Mick Burrow of Air Britain fame.... Thanks Mick!

Small holes were then drilled for the four upper wing and one under wing mast. Two of the gun blast tubes on each wing were filled in using scrap plastic sprue and filler and the corresponding underwing cartridge case ejector chutes were also filled in. To represent the fitting of the four .50 Brownings, the remaining blast tube holes were slightly widened (photo 7).

With all of the initial sanding on the model completed it was given a coat of Medium Sea Grey to highlight any blemishes and these were filled in and sanded smooth. Once happy that there were no more blemishes all of the lost panel lines were rescribed and extra details in the cockpits were added such as brass etched seat belts, a radar console for the observer that had been left over from an Aeroclub Vampire kit, wiring made from fuse wire and a few maps made from a backing photo found in an old aviation magazine (photo 8).

As the model was to represent the Mk II version of the Fulmar, the side intakes for the carburettor found on most of these, including the subject aircraft, were added and these helped to disguise the fact that the model has the canted-in radiator panelling of the Mk I and the fact that the kit does not represent the interior of the smaller chin radiator intake of the early version, or the larger one found on the Mk II, very well! If building a Mk I, a separate carburettor air intake, similar to that under the nose of a Hurricane or Spitfire, needs to be added inside this chin intake.

The one area of the Vista 1/72 scale Fulmar that I was a little wary about was the propeller spinner as I thought that it was slightly too small and I had the same feeling about the one supplied with this kit. The blunt Rotol spinner from the Hasegawa Hurricane Mk I kit looked to be more suitable, and as I had one left over from a recently built 'Eagle Squadron' boxing of the kit, I used that instead, along with its Jablo wooden propeller blades. The propeller blades used on the Fulmar were a slightly more 'even' shape than the



ones of the Hurricane with their comparatively straight leading edges, but this was easily rectified in minutes by sanding them to the correct profile. Later, the spinner received a couple of coats of Humbrol Gloss Red with a Gloss Yellow tip. Another addition from the Hurricane kit used on this model was a set of 'fishtail' exhaust manifolds, fitted to many Fulmar Mk IIs, including 'Ringa'.

Now that the model was sanded down, rescribed and almost complete it was looking every inch a Fulmar. I decided to add the white metal undercarriage legs and links next, into their pre-drilled holes, and then I could not put it off any longer, the vac formed canopies had to be cut out and fitted! (photo 9).

Cutting a few millimetres outside the lines indicated in the clear plastic and using a brand new craft knife blade, I took over an hour to remove all of the pieces, taking great care to avoid 'accidents' as there are no replacements in this kit! The most critical of these parts, the one that covers the observer's cockpit and ends at the back of the pilot's seat, was test fitted to the model and I nearly screamed when it was not big enough to touch the rims of both sides of the fuselage! Taking control of my senses, I thought the problem through and decided to lower the bulkhead at the back of the pilot's cockpit, and upon dry fitting again it fitted into place... just!

As I wanted to portray the observer's sliding hood in the open position this was carefully cut out of the main part which was then attached to the model using Humbrol Clearfix with tacks of super glue along the edges to give the joint some strength. Only a small section of the canopy was clouded by the super glue fumes and this was easily dealt with by painting a coat of Klear floor polish over the damage. The windscreen was the next part to be added, although it took quite a bit of filler to finally help to fair it into the fuselage, and then a section of plastic card was cut to size and fitted along the right hand sill of the pilot's cockpit. This was to replicate the panel that was fitted to this side only this, possibly to prevent noxious fumes from the engine exhausts from entering the cockpit? (photo 10).

To convert the kit's tailwheel to the type used on the Mk II a 'knuckled' torque link was made out of a scrap brass etched fret and after a section of the leg had been painted chrome silver to represent the oleo, the V-shaped link was fitted in place before the assembly was attached to the model (photo 11). (Unfortunately, later on in the construction of the model, this tailwheel was accidentally snapped off and damaged, so it was replaced by a similar looking part, again left over from a Hasegawa Hurricane).

All of the canopies and glazing were then masked off and painting commenced by adding the overall Medium Sea Grey base colour, using Polly Scale acrylic and after three brushed-on coats, the overall coverage was excellent (photo 12). On top of this, the disruptive Dark Green camouflage was applied using the same manufacturer's paint, which I find is the best around for hand brush painting, and after another three to four coats, the main scheme had been finished (photo 13). The pre-painted and assembled propeller was slid into place on its cocktail stick shaft and the Tamiya masking tape removed from the glazing. A coat of Humbrol Gloss Varnish was applied over the whole model so that the decals would adhere better and then it was time to examine the photo of 'Ringa' more closely.

The first observation of the real aircraft was that the hatch over the dinghy stowage bay, behind the observer's cockpit, appeared to be painted a different colour and had been sealed with cloth tape that had been roughly doped to keep it in place. After looking at other photos it became clear that others had similar looking panels here also. To replicate this I decided to paint the panel using Interior Green Grey as a possible primer colour and roughly painted



around the edges of it using a darker green than the surrounding camouflage colour to represent the 'messy' doping. This looked quite effective and I was happy with the result (photo 14).

The gun blast tubes were also sealed using doped-on patches, and to replicate these a section of scrap decal was applied over each hole to represent the stretched fabric and then overpainted using Humbrol Brick Red to represent the dope, and black stripes were painted around it to represent what looks like black tape placed around the dope.

Looking at the actual markings on 'Ringa' and then comparing them to the kit's decals I discovered a few errors. The codes 'BOJ' were split up with a gap between the 'BO' and the 'J' on the actual aircraft whilst they are grouped together on the decal sheet. The 'J' was in a more squared-off style than the rounded type on the sheet. Also the serials and 'Royal Navy' titles on the real aircraft are clearly in a squared-off style whilst the ones provided



in the kit are rounded.

To rectify these errors, the 'BOJ' codes were separated, although I had to retain the 'J' as I had no suitable alternatives in my spares box, and the incorrect serials and titles were replaced using squared-off letters and numerals from a Modeldecals set. All the decals were applied and sealed with another coat of Gloss Varnish, including a set of white circles that were found in the spares box for the propellers, as 'Ringa' clearly had manufacturer's logos on each blade.

The white decal stripe 'joining' the roundel to the tailplane on the left hand side was the indicator for the dinghy release chord, (also seen on the Barracuda), and to replicate this a section of thin fuse wire was run along the fuselage over the top of it. 'Ringa' had obviously seen better days by the time the photo was taken as its night fighter scheme had been scuffed and peeled away in various areas, especially under the pilot's cockpit and on the tail fin, revealing the natural metal underneath, so this was copied onto the model using Humbrol Metalcote Polished Aluminium. For other areas such as the wing roots, artistic licence came into play.

With most of the painting completed it was time to weather the model before the fiddly antennae were added, and first of all the model was given a coat of Polly Scale Matt Varnish to dull down the gloss paint work. Then the entire model received a colour wash, using water-based acrylics which comprised a mix of Dark Grey, Burnt Umber and Blue. This strange looking colour was not as dark as a straight black wash and the blue in it complemented the Medium Sea Grey of the model very well. I find that acrylics need



to be removed much faster than watercolours and frantically rubbing away with a damp paper towel I just managed to remove the excess paint in time, leaving the paint in the recessed panel lines and control surface joins as planned. By adding a wash like this it helps the model really look like a 3-dimensional object and makes it more realistic, as I have never seen an old aeroplane that has not got dark coloured seams along its panels.

To represent the exhaust marks along the fuselage side and the cordite stains across the wings I decided to use Mig pigment powders. A brush was loaded with a quantity of 'Exhaust Smoke' and lightly brushed over the required area gradually leaving a faint mark on the model. This was done until the required amount of staining had been achieved and then any excess was simply blown away. If you are not happy with your first attempt it can simply be washed off... brilliant!

With the painting and weathering out of the way it was now safe to tackle the next hurdle and fabricate those radar antennae. I had the feeling whilst making this model, that a brass etched fret may have originally been intended for this kit, but then dropped, due to the omission from the kit of various items that you might expect it to include, such as a pitot tube, seat belts, anti-glare shields etc, and considering that decals are included for a night fighter, a major 'missing item' is the lack of any 'Yagi' antenna for the wings.

Luckily, I had just finished building a 1/48 scale Special Hobby Barracuda, and as I had decided to build a version that did not have its radar fitted, I used this kit's photo-etched antenna and mast to represent the larger antennae that were located on the top of the wings on the inboard position. The three smaller antennae were 'cobbled together' by cutting up the unused AI radar parts from a couple of Tamiya Beaufighters and using the sections to make the distinctive double dipoles, which were then mounted on masts made from Aeroclub aerofoil strutting (photo 15).

The reason why only three of these were used is due to the fact that if there

was one below the right wing as well it would foul the airflow to the pitot tube. As this part is not provided in the kit, it too was scratchbuilt by using a thicker piece of strut and a piece of tube! The photo of 'Ringa' shows that it was also fitted with a Beam Approach Aerial under the fuselage, which was sourced from a Hasegawa Spitfire Mk IX kit, and there were two retractable Homing receiver antenna alongside it that were made from wire. The last antenna to be fitted was a UHF whip aerial that was fitted in place of the solid wooden radio mast and this too was replicated with a length of wire.

Once all the wing-mounted antennae were painted, using Humbrol Polished Steel, the finishing touches were added to the model. These included a rear-view mirror from a Spitfire, a set of converted anti-glare shields from a Hurricane and the kit's own sliding canopies, carburettor air intake ice covers and the undercarriage doors. The doors attached to the main undercarriage legs and needed to be shortened. After studying a few photos, the protruding piece from the top of each door was cut off and parts C7, the additional doors that attach to the outside, were left off. Also left off were the inner undercarriage doors as none of the complicated array of operating doors were included with the kit, and by the time the night fighters had come into service most Fulmars had had these doors removed anyway to ease maintenance.

With that my long-awaited 1/48 scale Fulmar was completed (photo 16) and I was so pleased with the end result, I ordered another one straight away from the only UK supplier, Aeroclub. The cost of the kit is rather steep at about £45.00, but considering the quality, its subject and that it is made out of resin, I suppose this is the going rate these days.

I would like to thank Warrior Models for supplying the kit for me to build and I look forward to comparing it with the forthcoming Special Hobby kit that has recently been announced. According to 'Sods Law' I bet the Special Hobby kit includes a set of 'Yagi' antennae – just in the same vein as after washing your car you know very well that it will start raining! **AM**





EMB-314 'Attack Tucano'

Trainer with Teeth

Andy Evans looks at Brazil's not so tame trainer!

■ THE EMB-314 SUPER TUCANO IS A FASTER AND HIGHER altitude enhanced version of the basic EMB-312 Tucano trainer, which is operational with the Air Forces of some fifteen countries. The prototype of the 'Super Tucano' first flew in 1992 and both the Tucano and Super Tucano have been developed and built by Embraer of Brazil.

The principle missions of the aircraft, in addition to basic and advanced pilot training, are Border Patrol and Counter-insurgency Operations. The enhanced flight envelope of the new aircraft is +7G and -3.5G and with its small size, small visual and radar signatures, together with high speed and agility, armour protection and critical systems redundancy, the aircraft has a high survivability factor.

In August 2001, the Dominican Republic signed a contract for the supply of ten Super Tucano aircraft, to be used for pilot training, internal security, border patrol and counter-narcotics trafficking missions, under the *Sistema de Vigilancia da Amazonia* (SIVAM).

In 1995, Embraer was awarded a contract to develop a variant of the Super Tucano, known as the ALX or Light Attack Aircraft, for the Brazilian Air Force (FAB), optimised for the environmental conditions of the Brazilian Amazon. The ALX was to be capable of operating day and night missions from remote bases and unpaved runways with minimal ground support.

In August 2001, the Brazilian Air Force awarded Embraer a contract for seventy-six ALX aircraft, with options for a further twenty-three. Fifty-one of these aircraft were to be two-seater versions, designated AT-29, due to enter service at the Natal Air Force Base to replace the AT-26 Xavante advanced jet trainers which are approaching the end of their operational lives. The remaining twenty-five aircraft will be the single-seat A-29 version. One of the main missions of the aircraft will be border patrol programme.

The all-glass cockpit is fully Night Vision Goggle compatible and equipped with avionics systems from Elbit Systems Ltd of Haifa, Israel, including a head-up display (HUD), advanced mission computer, naviga-



tion system and two, 6 inch x 8 inch colour liquid crystal multi-function displays. The head-up display with 24 degree field of view and the advanced weapon delivery system are integrated through a MIL-STD-1553B data bus. The pilot is provided with Hands On Throttle And Stick (HOTAS) control. The pilot is protected with Kevlar armour and provided with a zero/zero ejection seat. The clamshell canopy, hinged on the starboard side and electrically activated, is fitted with a de-icing system and features a windshield capable of withstanding the impact of a 4lb bird at 300 knots. A Northrop Grumman onboard oxygen generation system, (OBOGS), is also installed.

The aircraft is fitted with two central mission computers. The integrated weapon system includes software for weapon aiming, weapon management, mission planning and mission rehearsal. Onboard recording is used for post-mission analysis, and the aircraft is equipped with an advanced laser inertial navigation and attack system, a global positioning, (GPS),



Low angle frontal aspect



Tight formation of Super Tucanos



Detail view of the front cockpit



Detail view of the rear cockpit



Rocket and gun-pod detail



Gun pod on a well worn pylon!



Brazilian Air Force Super Tucano



Detail view of the ALX's front cockpit



Easing down on the runway a Tucano comes in to land



A Super Tucano being prepared for flight. Note the side hinging canopy



Tail and markings detail



Brazilian Air Force Super Tucanos at the Natal Air Force Base

system and a traffic alerting and collision avoidance, (TCAS), system.

The Attack Tucano is fitted with a forward-looking infra-red AN/AAQ-22 SAFIRE turret on the underside of the fuselage, allowing the aircraft to carry out night surveillance and attack missions, and has five hardpoints for carrying weapons and is capable of carrying a maximum external load of 1,500kg. The aircraft is armed with two wing-mounted 12.7mm machine guns with a rate of fire of 1,100 rounds per minute and is capable of carrying general purpose bombs and air-to-air and air-to-

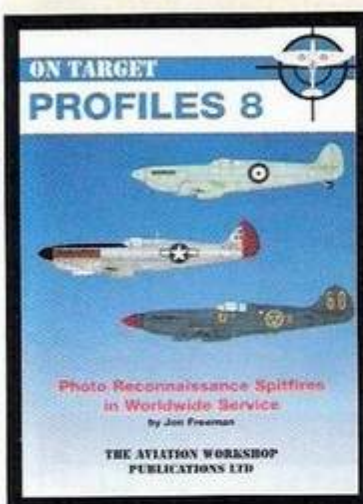
ground guided missiles. Brazilian Air Force aircraft will be armed with the MAA-1 Piranha short-range infra-red guided air-to-air missile.

The ALX aircraft has a more powerful Pratt and Whitney Canada PT6A-68/3 turboprop engine, rated at 1,600 shaft horsepower, drives a Hartzell five-bladed constant speed fully feathering reversible pitch propeller. **AM**

Thanks

My thanks to Luciano Porto and Andre Duailibi of 'Spotter-BR' for their invaluable help.

On Target Profiles 8 – 'Photo Reconnaissance Spitfires in Worldwide Service'



by John Freeman
UK price £13.99
Aviation Workshop
Publication Ltd

I have always had a fascination for the colour schemes of photo reconnaissance aircraft and have been suggesting for some time that PR Spitfires would make a good subject for a monograph of this type. My prayers have now been answered!

This volume uses the same formula as previous books in the 'On Target Profile' series - pages and pages of colour profiles and four-views with informative captions. To give you an idea what you get for your money, there are no less than twenty-five four-views and eighty-four profiles! Arguably the greatest concentration of PR Spitfires ever produced in one publication.

With so many subjects to choose from, it is difficult to pick out any specific ones for particular attention, but I suppose I must include the famous PR IA of No 2 Camouflage Unit in overall 'Camotint'. Several pages of 'PR Blue' and 'PRU Pink' colour schemes follow but, these apart, there are many other attractive colour schemes, such as a PR IC of No 1 PRU in overall dark blue and another scheme that stands out is on a machine of No 2 PRU based in North Africa, with white and Azure Blue upper surfaces. Perhaps the most unusual colour

used on these aircraft was 'PRU Mauve' - and several aircraft sporting this scheme are included.

It is not just the colour schemes either that are so variable, but also the markings. There is a considerable variation in the size and type of roundels used on the RAF machines and indeed the code letters, all of which are mentioned in the informative captions.

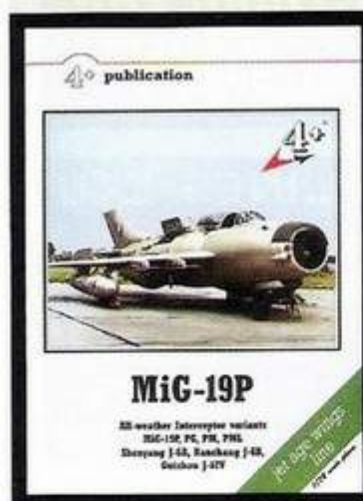
It's not just the pure PR Spitfires that are featured either, but dozens of Tac R and FR Spitfires, from the wartime years and beyond, and not only in RAF service, but from many other Air Forces - including South Africa, India and Turkey.

There is a centre-page photo spread with some interesting b&w and colour shots, but the 'icing on the cake' must surely be the three decals sheets that have been produced to compliment this book, featuring scores of the most interesting examples. Combined with the book they are a Spitfire addict's dream come true and I can recommend it to all modellers and enthusiasts.

Ernie Lee

Thanks to Aviation Workshop for the review copy.

MiG-19P



by Michal Ovcack & Karel Susa
UK price £11.50
4 + Publishing

This 36pp softback deals with the all-weather interceptor variants of the MiG-19, the MiG-19P, PG, PM, PML, Shenyang J-6A, Nanchang J-6B and Guizhou.

All the volumes in this series are essentially intended for the modeller, consequently most of the pages are devoted to them. There are three pages of text covering the variants, (the text is very small, giving you 'more for your money'). There are some forty-five b&w photographs and fourteen in colour, mainly of the complete aircraft, followed by a huge number of close-up shots, again in both b&w and colour.

Following this are the usual 1/72nd drawings, which are extremely comprehensive, covering all the variants described in the book. Added to this is a full page of

drawings illustrating the external stores and a diagram of external store variations carried on the aircraft.

The last section features the colour profiles - eighteen of them, which cover all the nations that used this aircraft including the Soviet Union, Czechoslovakia, Poland, Bulgaria, Cuba, East Germany, Hungary and Rumania with the Chinese variants essentially restricted to the Chinese Air Force.

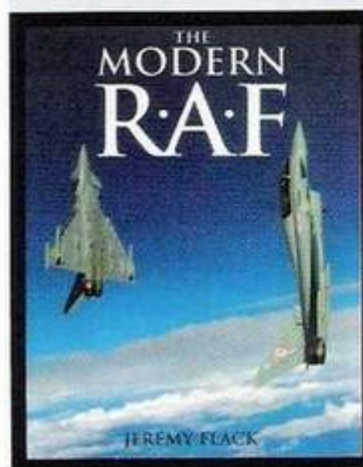
There is one other small section that must be mentioned, which covers both airframe and cockpit details in a fascinating discussion about the subtle variations in the colour of the outer skin as well as colour details of the various cockpit components.

If you build models of Post War Soviet aircraft, then this is the book for you, and as a modellers' aid it is about as good as they come and I have no hesitation in recommending it.

Ernie Lee

Thanks to 4+ for the review sample.

The Modern RAF



by Jeremy Flack
UK price £35
Crowood Press

Just looking at the cover you could be forgiven for thinking that this is just another collection of photographs of today's RAF aircraft, but you could not be more wrong. This 288-page hardback is bursting with information! It is basically divided into four sections, the first of which covers the aircraft, with a technical specification and a brief description of each machine covered. Some descriptions are longer than others, depending on the type's importance. There is at least one photograph of each current type and even aircraft of the 'Battle of Britain Flight' and gliders are included.

Chapter Two is given over to RAF Locations, and that includes everywhere, not just air bases. Even the most dedicated aviation

enthusiast who can reel off most of the RAF's bases, could find a few rare locations in this section that are not exactly on the tip of the tongue, for instance RRH Benbecula, originally an airfield, it is now a remote radar head, as the title denotes. Others include RAF Digby, which believe it or not is the home of No 591 SU, and the Aerial Erector School and JSSU. Such extreme pieces of information abound in this section and make you question your knowledge.

Next comes Chapter Three, 'Units' - again we have complete coverage, not just aircraft squadrons but Bomb Disposal units, RAF Regiment, Station Flights, Fire Services and many more. The last area to be dealt with is 'RAF Equipment and Weapons', including forthcoming weapons.

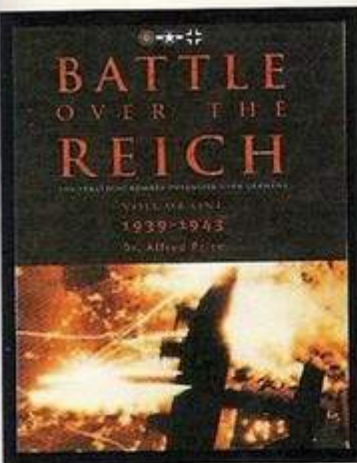
Sadly, all the photographs within the body of the text are monochrome, but there are two colour sections with around two dozen photos in each.

Altogether an extremely comprehensive volume on the subject, and one I can recommend to all RAF enthusiasts.

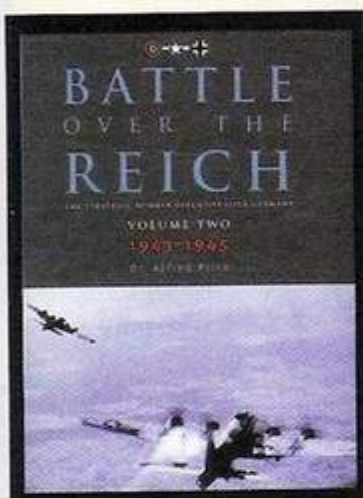
Ernie Lee

Thanks to Crowood for the review sample.

Battle over the Reich - Volume Two



by Dr Alfred Price
Classic Publications
an imprint of Ian Allan
Publishing
UK price £27.99



Although it could be argued that much has already been written on the night and day bomber campaigns over Germany, Alfred Price's writing style is very informative, easy to digest and follow, and does cover the whole period from the start to the finish of World War Two in two volumes.

Recommended.

Neil Robinson

Thanks to The Aviation Book Centre for the review sample.

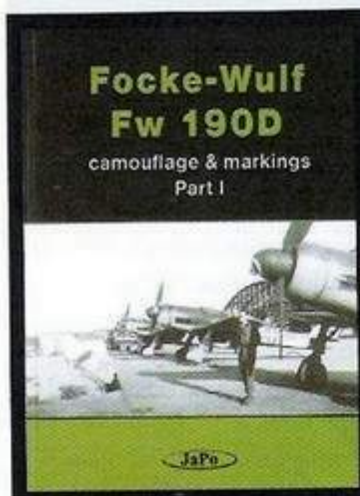
Volume Two of 'Battle over the Reich', the story of the strategic air offensive over Germany, continues where Volume One left off, ('Battle over the Reich - 1939 to 1943', published at the beginning of the year and written by the same author). Both are some 160pp and hardback.

The Chapter headings start at Chapter 8, the Battle of Attrition by Night, and then go on to cover the daylight battles over the Reich, the campaign against the German oil industry, the autumn/winter 1944 bombing campaigns and into the final desperate months of World War Two. The last chapter, 13, is interesting in that it covers the *Luftwaffe* weapons that came too late, including the He 162 'Volkswagen', Dornier Do 335 'Pfeil', Bachem Ba 349 'Natter' and some of the lesser-known, innovative air-to-air guided missiles.

The selection of photographs is good, (albeit many may have been seen before, especially by those readers who have been around for a few years!), and there is a generous smattering of excellent colour artwork to match certain photographs, which is a regular 'essential' of Classic Publications' books.

One feature I particularly liked about both volumes is the inclusion of 'separate information boxes' which contain details about such things as 'Scarecrows' the mysterious explosions reported by RAF bomber crews, US daylight Combat Box Formations, the problem of sabotage within the German aero industry and the Me 262 and Hitler's interference, to randomly name just four.

Focke-Wulf Fw 190D - camouflage & markings Part 1



by Marc Deboeck, Eric Larger
and Tomas Poruba
JaPo Publications
UK price £29.99

Part One, in the eagerly-awaited two part monograph on the camouflage and markings of the Fw 190D has literally just arrived on my editorial desk - and I'm invoking editorial prerogative to review it myself!

The initial camouflaging of *Luftwaffe* aircraft was the manufacturers' responsibility, and in this first volume, the authors and artists have literally classified every combination of camouflage scheme and pattern sported by the Fw 190D, describing and illustrating the key identification features of each production batch specific to the various manufacturers, sub-contractors and assembly plants!

Littered with hundreds of photographs, many that have never been published before, and profusely illustrated with scores of full colour profiles, four-

views and scrap views, showing the numerous variations from batch-to-batch and from manufacturer-to-manufacturer, all is explained in an easy to understand and very readable way, which will allow the aviation enthusiast/historian to acquire an excellent working knowledge of the basics and numerous vagaries of German aero production in the last months of World War Two and the modeller with everything he needs to identify and accurately paint a model that is as realistic as makes no matter!

If you are 'into' World War Two *Luftwaffe*, then I cannot recommend this book highly enough. It's simply wonderful! It's not exactly bedtime reading, (although that's where I read the review copy, in a couple of nights from cover-to-cover, much to my wife's chagrin!), but be sure to keep it within easy reach on your library shelves as it will be one of the most used reference books you will have the fortune to own.

Roll on part 2, which will continue the coverage of the descriptions of the various production batches and the operational adaptations, repair and salvage organisation, life cycles of selected aircraft and Fw 190D-15 camouflage and markings.

Unreservedly recommended!

Neil Robinson

Thanks to The Aviation Book Centre for the review sample, who are selling the book for £29.99 for a limited period!

Suomen Ilmavoimien Historia series No 7 'Venäläiset hävittäjät' and No 25 'Hurricane and Gladiator'



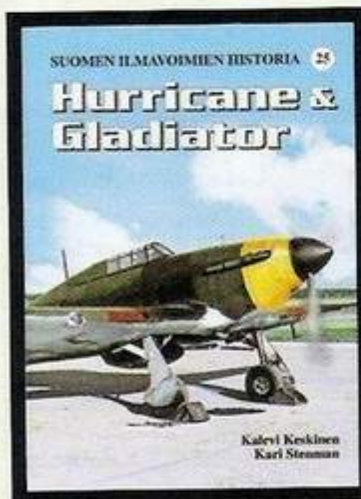
by Kalevi Keskinen and
Kari Stenman
Kari Stenman Publications
UK price £21.99

The latest English-language reprints of this essential series of books covers an eclectic range of aircraft types used by the Finnish Air Force in World War Two.

No 7, 'Venäläiset hävittäjät', (which I think means something like 'Soviet aircraft in Finnish service' - there is no English translation for the title!), features aircraft 'acquired' from the Soviet Union's VVS, during the Winter War and the Continuation War. The types covered are mainly LaGG-3, Polikarpov I-16, I-15 and I-153, that had either been shot down and crash-landed, or had otherwise been damaged, and had landed on Finnish soil, and which were subsequently repaired and put into Finnish Air Force service.

Talk about 'turning your own weapons against you', the Finns were past masters at this and had a dedicated skill of being able to repair and mend, and then put back into service, airframes that other air forces would probably have written off!

Obviously released in no particular numerical sequence, the second of this month's releases, No 25, 'Hurricane & Gladiator', relate the stories,



and the colour scheme and markings changes, of these two British stalwarts in Finnish Air Force service. Initially the Hurricanes were operated in their RAF-style factory schemes before adopting the more imaginative black and green upper surfaces with pale blue unders sweeping up the fuselage sides. The striking yellow Continuation War markings just made the scheme even more appealing!

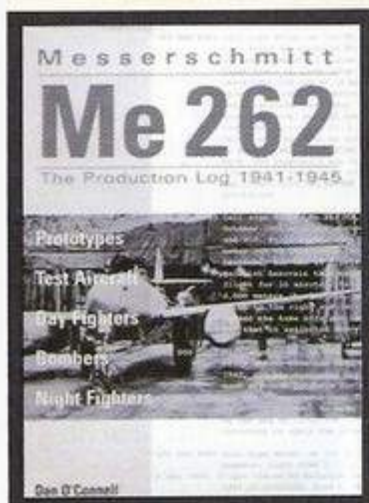
Even by Finland's undemanding standards - (if it was fitted with guns and it flew then it was combat machine!) - the Gladiator was getting very 'long in the tooth' and despite being used as a fighter in the Winter War, had very sensibly been relegated to 'armed reconnaissance' in some of the quieter sectors by the time of the Continuation War.

If you didn't get the Finnish-language versions when they were first published, I urge you not to miss them this time around. They may seem expensive on the face of it, but the information they give and the number of unique photos they contain, means they are priceless!

Neil Robinson

Thanks to Kari Stenman Publications for the review sample

Messerschmitt Me 262 – The production log 1941-45



The dedication of some authors never ceases to amaze me. I must admit that as far as this aircraft was concerned I assumed that there were just a few units operational at the latter end of the World War Two, plagued with serviceability problems and being totally overwhelmed by the number of allied fighters that confronted them. However, it seems that there were no less than 1,500 produced, and believe it or not, this chap has found details of 1,300 of them!

Part one is a short section discussing werknummern, after which we move on to the 'meat' of the book - all the known Me 262 aircraft listed by werknummern, in numerical sequence.

It starts with a detailed account of the prototypes with photographs and a colour profile. Some of the detail is phenomenal, not only do we have the werknummer but the call sign and in some cases, a page of detailed information. For instance '130018' call sign V1+AR, an Me 262A-1a was assigned to E-Stelle Rechlin-Larz as E3+01 and used for engine development. The text goes into great detail about the work carried out on it and reads like an engineers report.

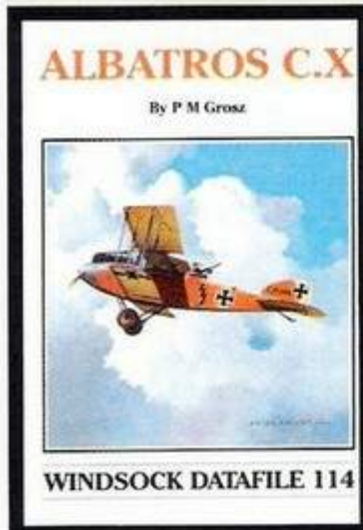
Some of the aircraft are recorded with just one line as very little information has come to light, but it is still a remarkable book of reference. Although there are many photographs, both in mono and colour, I feel this is more a book for the dedicated historical aviation enthusiast, rather than for the enthusiast modeller, but as such, it is in a class of its own, and can be recommended for those with a deep interest in Willy's Schwalbe.

Ernie Lee

Thanks to Midland Counties for the review sample

by Dan O'Connell
Ian Allan Publishing
UK price £35.00

Windsock Datafile 114 – Albatros C.X



by P M Grosz
UK price £10.25
Albatros Productions

This time Windsock has turned its attention to this Albatros two-seater, built in competition with the Rumpler C.IV as a long-range reconnaissance machine. It was found inferior to the latter aircraft and many were relegated to the training role. Even so, over 400 were built.

When you buy a Windsock Datafile, you know exactly what you will get - starting with a brief description then an operational history, all illustrated with lots of beautiful contemporary photographs, which deserve special merit. As all model builders know - good photos are vital and this Datafile has some really superb ones.

The full and half page illustrations showing rigging detail could not be bettered and although some of the cockpit shots are a little faded, (what do you expect, they were taken ninety years ago!), they are well worth their inclusion.

Other manufacturers built this machine and this is reflected in the 1/72 and 1/48 scale drawings. These show the variations between the original Albatros-built aircraft and those by Link-Hofmann, Roland and BFW. The book culminates with the colour profiles illustrating three machines - all of which were built by different manufacturers.

This is yet another 'automatic buy' for aircraft enthusiasts and modellers of this wonderful period, and don't forget, even if your favourite aeroplane has not been produced in kit form yet, our friends in the Eastern European limited-run kit industry constantly keep a beady eye on Windsock books for ideas and reference!

Ernie Lee

Thanks to Albatros productions for the review sample.

The RAF Jaguar - Guardian of the Skies



This 'Labour of Love' started life as a magazine feature - that simply grew and grew and eventually matured into a 72pp photographic record of a shape that will sadly disappear from our skies over the next few months. The author, an unrepentant and self-confessed modeller, (and an ex-RAF airframe technician based at Coltishall for several years), was frustrated by the lack of photographic material that was available on RAF-operated Jaguars - and decided to help restore the imbalance!

by Patrick Watson
Author's private publication
UK price £17.50

The book is a stunning photographic survey covering every aspect of the Jaguar in RAF service during the past couple of decades, with scores of 'panel open' detail, intimate close-ups, underwing (and overwing) ordnance, and full airframe colour scheme and markings, photographs - more than enough to satisfy the needs of the most avid aviation enthusiast and/or aircraft modeller.

The photographs have been well chosen, the majority by the author himself, and were taken with an enthusiast modeller's eye, and are accompanied by informative and helpful captions.

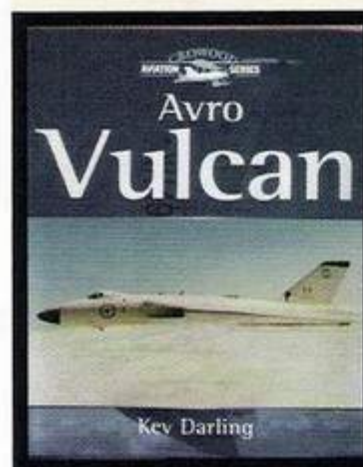
Surprisingly, there isn't all that much available on the Jaguar in RAF service and this book is a very fitting and timely tribute to an aircraft that has given almost forty years of service in RAF markings and a boon to modellers wanting to get those all important details right!

Recommended to aviation enthusiasts and modellers alike.

Neil Robinson

Thanks to Patrick Watson for the review sample

Avro Vulcan



by Kev Darling
UK price £29.95
Crowood Press

There have been several books on this aircraft before, but now it is the turn of Kev Darling, (remember books go out of print very quickly these days, so new ones are regularly needed). There must be many aviation enthusiasts who have never seen a Vulcan fly. There are many survivors scattered around Britain, but to really understand the aircraft you need a book such as this.

As I said, the subject has been written about before, (I have most of them in my library!), but I can say this is as comprehensive as any I have seen, and arguably more so. A fairly hefty 208pp A4 hardback with a lot to say.

The first chapters cover the concept and a reasonably detailed look at delta wing development in other machines. The development of the Vulcan is naturally covered in greater depth, followed by coverage of its service within the RAF.

The book is profusely illustrated in both colour and monochrome. Also included are a number of sketches, showing, for instance, the 'Skybolt' installation and the '3 minute take-off' set up. In the 'Vulcan described' chapter there are a large number of manual-type drawings and, although many of these are aimed at the aviation enthusiast, some will be invaluable to the modeller - with such things as the ejection seats, undercarriage detail and cockpit layout.

A separate section is included on the 'Falklands episode' and the type's 'stop-gap' use as a tanker. With an appendix covering Vulcan histories, operating units and the location of preserved airframes, this is a book not to be missed by any 'Vulcanite'.

Ernie Lee

Thanks to Crowood for the review sample.



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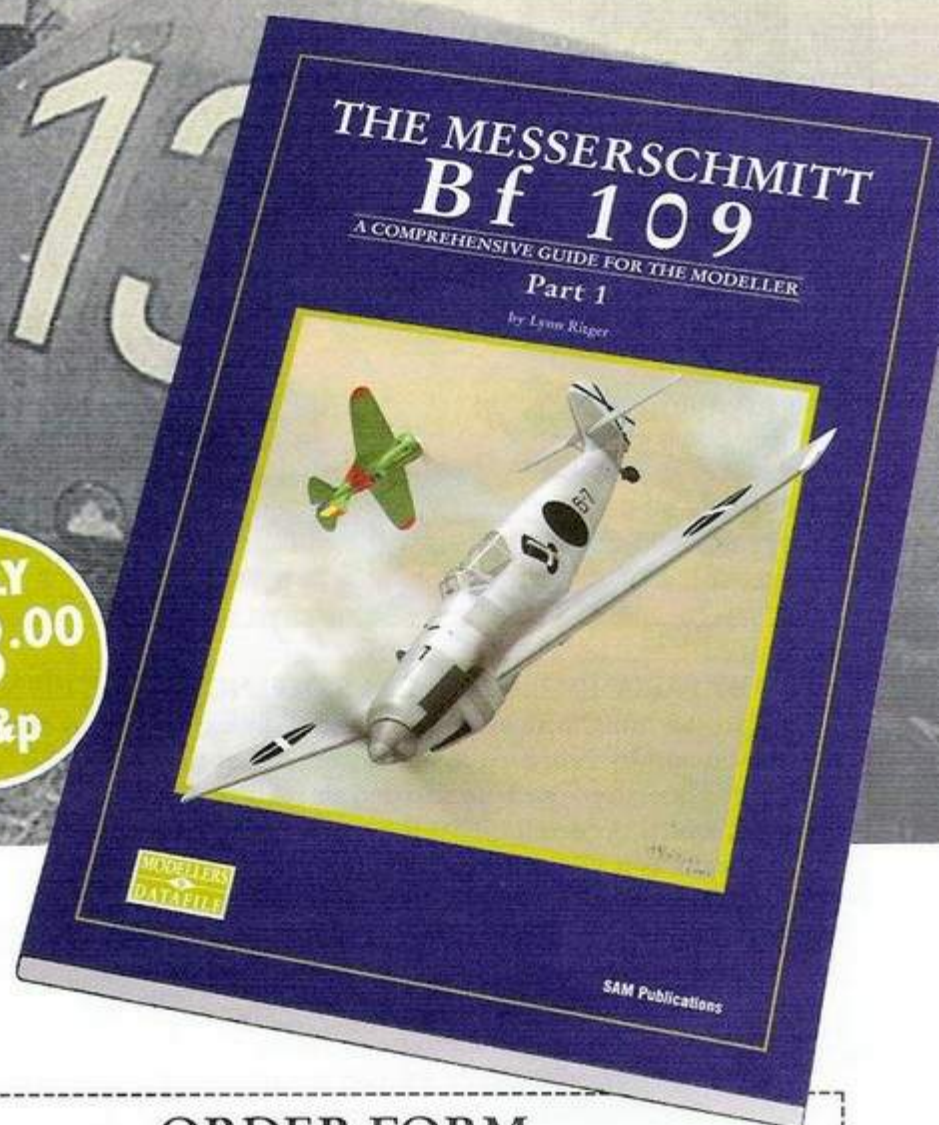
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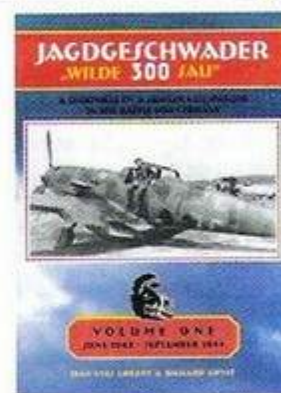
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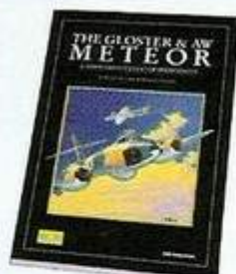


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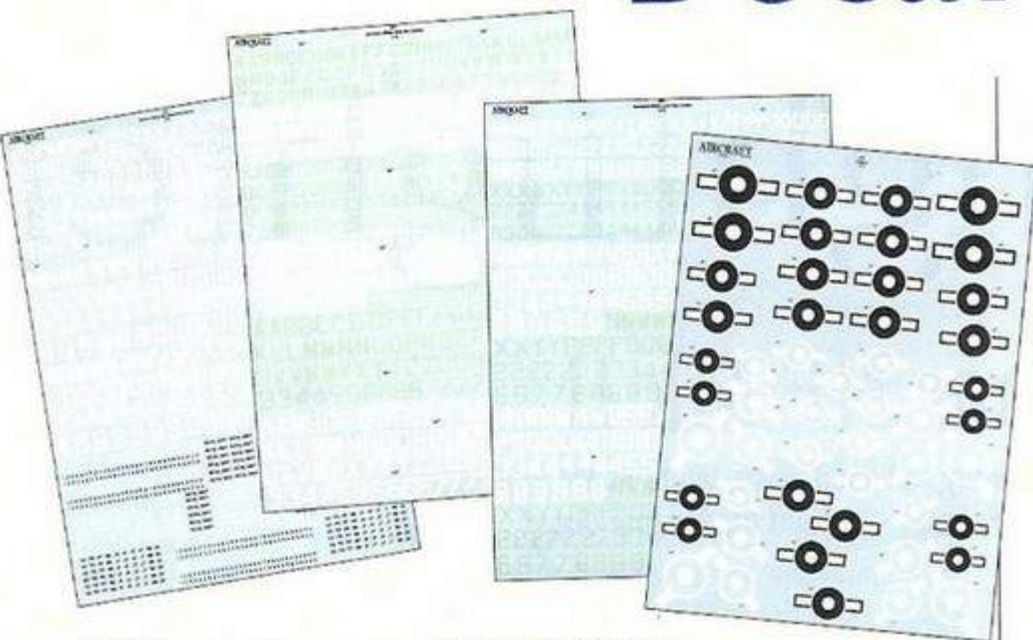
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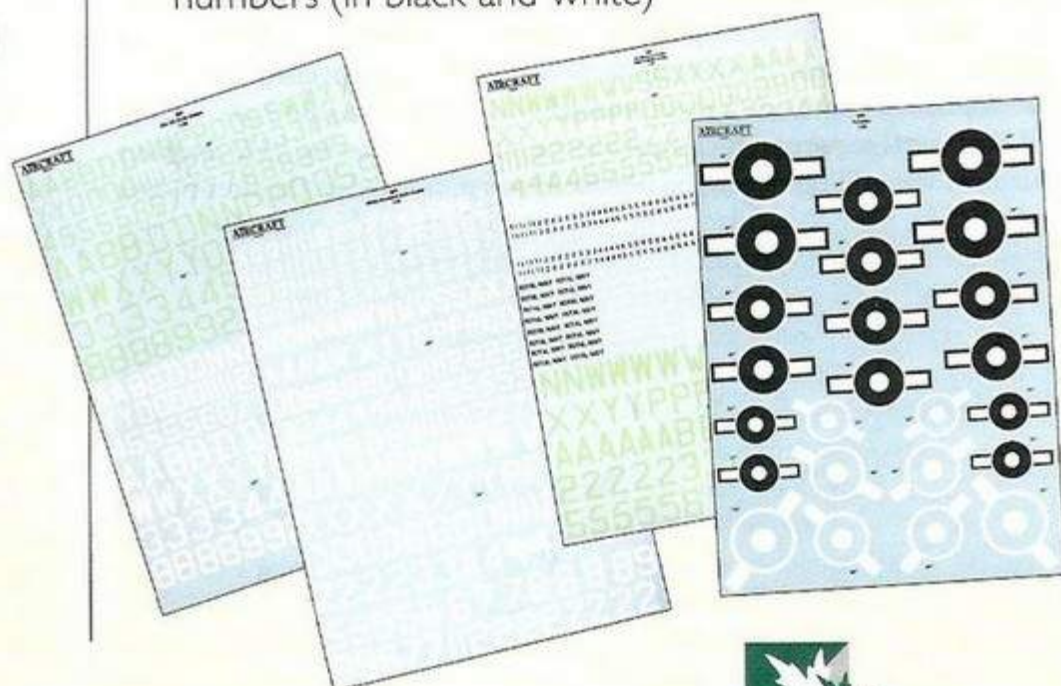


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